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Interpretation of Ambiguous Body-Related Stimuli in the Eating Disorders.

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INTERPRETATION OF AMBIGUOUS BODY-RELATED STIMULI IN THE EATING DISORDERS

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Abstract

Clinical observations suggest that persons with an eating disorder are obsessed about body size and shape. This obsession with body size and shape has been hypothesized to lead to biased processing of body related information. Recent research indicates that individuals who are highly preoccupied with their weight tend to react to body related stimuli with negative emotions and tend to infer a negative meaning when information about their own body shape is presented within an ambiguous context. This study investigated this type of judgment bias in eating disorder and body dysphoric subjects. In addition, this study examined the ability to modify distorted cognitive processing when instructed to do so.

Women diagnosed with an eating disorder (n = 30), body dysphoric women (n = 30), and nonsymptomatic women (n = 30), were recruited as subjects for this experiment. In phase 1 of the experiment, subjects were instructed to imagine themselves in situations described by body related ambiguous sentences. The ambiguous body related sentences could be interpreted with either a positive (non-fatness) or a negative (fatness) meaning. Results on a subsequent memory task indicated that eating disorder and body dysphoric subjects recalled their imagery of the body related

situations with a negative "fear of fatness" interpretation. Whereas, nonsymptomatic control subjects recalled their imagery with a positive interpretation.

In phase 2 of this experiment, the ability of the eating disorder, and body dysphoric subjects to change their cognitions was examined. Subjects were instructed to imagine themselves in each ambiguous situation (as they did in the original task), but this time they were asked to imagine the scenes in either a positive or negative fashion. Half of the subjects in each group received positive instructions, and the remaining half of the subjects received negative instructions. Results indicated that the eating disorder and body dysphoric groups were able to modify their imagery and subsequent cognitions.

Introduction

Cognitive factors have been assigned a central role in cognitive behavioral theories of eating disorders (Schlundt, & Johnson, 1990; Williamson, Barker, & Norris, 1993; Vitousek, & Hollon, 1990). Schlundt and Johnson (1990) have proposed that the cognitive aspects of body image consist not only of ideas pertaining to body size and shape, but also involve the implications of body shape for self-evaluation and relationships with other people. Vitousek and Hollon (1990) have postulated that the meaning of weight will be more elaborated, idiosyncratic, and emotionally charged for eating disorder individuals than for those ascribing to normatively distorted views about weight.

Until recently, cognitive assessment of the eating disorders has been limited to compiling self-statements about eating and weight. Although it is important to note that persons diagnosed with an eating disorder have distorted cognitions related to the importance of weight, this information does not allow us to determine how the theme "fear of fatness" and the consequent body dysphoria developed. In addition, it does not allow us to determine through what means "fear of fatness" and body dysphoria is perpetuated, and how it effects the specific pathology of eating disordered individuals.

Vitousek, and Hollon (1990) suggested that the information processing paradigm might be useful in distilling the "cognitive essence" of the eating disorders by identifying processes similar to the negative bias in memory found in depression (Williams, et al., 1988), and the attentional and interpretational biases found in anxiety disorders (Mathews, 1990). This study will investigate judgment biases that occur in response to body-related ambiguous stimuli using an information processing methodology. In addition, this study will investigate the ability to change these cognitive processes if instructed to do so. The information processing conceptualization of memory will be discussed in the next section followed by a discussion of an information processing conceptualization of eating disorders.

Information Processing Models of Psychopathology

The essence of this cognitive perspective is that the central psychopathological concerns of an individual bias the manner in which information is processed (Williamson, in press). Information processing biases, such as biases of memory, attention and judgment, are thought to play a determining role in the development and maintenance of psychological disorders. These biases tend to be specific for information which is of emotional concern to the individual (Eysenck, Mogg, May, Richards, & Mathews, 1991;

Jackman, Williamson, Netemeyer, & Anderson, in press). In addition, cognitive biases are generally specific to the unique content of the symptoms of a specific psychological disorder (Williams, et al., 1988), which is referred to as the "content specificity hypothesis" (Dagleish, & Watts, 1990). For example, anxiety disorders have been shown to have an attentional bias toward threatening stimuli, but this bias occurs only when the stimuli are related to their specific area of concern, e.g., spider related words for spider phobics (Watts, McKenna, Sharrock, & Trezise, 1986) or stimuli which are socially threatening for social phobics (Mathews, & MacLeod, 1985). Using the content specificity hypothesis, we can predict that persons diagnosed with an eating disorder might bias the processing of information related to body size and to food.

Beck (1976) proposed that individuals who are vulnerable to emotional disorders have dysfunctional cognitive structures or schemas. Although the term schema has no fixed definition, it is generally used in reference to a structured framework of knowledge that a person possesses about a particular domain (Alba, & Hasher, 1983). Beck and Emory (1985) hypothesized that when specific schemas are activated their content directly influences the content of a person's perceptions, interpretations, associations, and memories at a given time. Complex schemas

are expected to contain various rules, beliefs, and assumptions about an object, person or topic. For example, depressed persons are thought to have schemata concerned with loss, negative evaluation of the self, world, and the future, whereas, anxious schemata tend to be organized around vulnerability and danger. It is likely that persons diagnosed with an eating disorder have schemata organized around body shape, weight and food.

Schemata are thought to influence both encoding and retrieval processes. Schema theory proposes that the schema guides what is encoded in memory by selecting and modifying information to arrive at a coherent representation of an experience (Alba, & Hasher, 1983). In addition, it has been hypothesized that schemas determine how information relevant to emotions is interpreted.

Bower's (1981, 1987) spreading activation model of memory postulated that information is stored in memory in the form of distinct "nodes" representing information units. These nodes are connected to each other by associative pathways created in the course of past experiences. This model assumes that memory is composed of "emotion nodes" which are linked to memories of events that occurred when that particular emotion was experienced. Bower stated that when an emotion node is activated, excitation spreads out along its connections, thus priming and bringing into

readiness these associated ideas and memories. He proposed that one's emotional state will bring into readiness certain perceptual categories, certain themes, certain ways of interpreting the world that are congruent with one's emotional state; these mental sets then act as interpretive filters of reality and as biases in one's judgment. This expectation driven model aids in the processing of the social environment by allowing us to classify ambiguous gestures, phrases, and expressions within a social context.

Both schema theory and Bower's network theory predict the existence of mood-congruent effects, I. e., anxious mood should make all threatening material more accessible. It follows that if one is experiencing a state in which one is negatively evaluating their body, it should make negative body related material more accessible.

Information Processing and Eating Disorders

Information processing biases have been found in depressed persons, anxious persons, and more recently in persons diagnosed with an eating disorder. Depressed individuals exhibit cognitive biases specific to themes such as failure, loss, and being unloved, and anxious individuals have cognitive biases specific to themes of danger and vulnerability. It is presumed that individuals preoccupied with body shape and weight (eating disorder and body dysphoric individuals) may express cognitive biases that are

specific to fear of fatness and/or misperceptions of body shape and weight (Sebastian, & Williamson, 1993). It has recently been proposed that body image disturbance associated with eating disorders should be reformulated as a type of cognitive bias (Vitousek, & Hollon, 1990; Williamson, in press).

Vitousek and Hollon (1990) proposed that the core psychopathology of eating disorders is represented by body related self-schemata that unite views of the self with beliefs about body weight, size and shape. These body-related self-schemata are thought to lead to biased processing of food, body shape and body weight related information. Williamson (in press) suggests that the structure of these body related self-schemata should involve a dense network of associations between self and body size/shape and appearance. Bower (1981) would propose that these highly elaborated memories associated with body should also be associated with emotional memories of body. Consequently, if body memories are activated, then emotional memories of body will also be activated. It is generally believed that the emotion associated with body memory in persons diagnosed with an eating disorder will be negative or "fatness-related".

Body dysphoria/obsession with body size has been hypothesized to cause persons with an eating disorder to

selectively attend to body-related stimuli, and it may also cause them to misperceive or distort body related information (Williamson, Barker, & Norris, 1993). Several information processing methodologies have been used to investigate attentional biases in persons diagnosed with an eating disorder, such as the Stroop color-naming task, the dichotic listening task, and the lexical decision task. The Stroop color-naming task (Stroop, 1935) has been used to show interference in the color naming of words related to personally or emotionally significant material. In the original version of the Stroop task, stimulus words were printed in different colored inks, i.e., blue, red, etc. The subject was instructed to name the color of a word while ignoring the content of the word. The color-naming speed of meaningless stimuli was compared to the color-naming of words. Stroop (1935) found that latency times were longer when color-naming words whereas no interference occurred when color-naming meaningless stimuli. Recent modifications of the Stroop task have consistently found slowing of color naming when stimuli are related to the subject's psychopathological concerns, e.g., threatening words for generalized anxiety disorder (Mathews, & Macleod, 1985), and negativistic words for depression (Gotlib, & McCann, 1984).

The Stroop task has recently been used to investigate interference to body and food related stimuli in the eating

disorders (Ben-Tovim, Walker, Fok, & Yap, 1988; Fairburn, Cooper, Cooper, McKenna, & Anastasiades, 1991; Schmidt, & Telch, 1991). Bulimic subjects were generally slower than control subjects in color-naming body and food related stimuli (Cooper, Anastasiades, & Fairburn, 1992; Fairburn et al., 1991). Channon, Hemsley, and de Silva (1988) found similar results for persons diagnosed with anorexia nervosa in response to food and body related stimuli. This interference effect was not found for normal controls (Fairburn, et al., 1991). Fairburn et al. (1991) concluded that normative degrees of concern about eating, weight, and shape found in most women were not sufficient to interfere with information processing. However, two recent studies have found that normal subjects with a high degree of restraint also exhibited slowed color-naming in response to food and weight related stimuli (Long, Hinton, & Gillespie, 1994; Perpina, Hemsley, Treasure, & de Silva, 1993). These results indicate that the Stroop effect may not be indicative of specific eating disordered psychopathology, but instead may be associated with persons highly preoccupied with food and weight.

The dichotic listening task has also been used to investigate attentional biases in the eating disorders. In this task, subjects are presented with two prose passages, one to each ear. Subjects are then instructed to repeat

aloud the passage presented in one ear (attended channel), and ignore the passage in the other ear (unattended channel). Subjects are expected to detect "target" words in each passage. In general, subjects are able to detect target words in the attended channel, but have trouble detecting the target words in the unattended channel, unless the words are emotionally significant. Using this task, Schotte, McNally, and Turner (1990) found that bulimic subjects detected body size related target words more often than neutral words when both were presented in the unattended channel. In addition, bulimic subjects exhibited a larger skin conductance response than normals when body size related words were presented in either the attended or unattended channel.

Results from a recent study indicate that body dysphoric individuals selectively attend to body size related words (Fuller, Williamson, & Anderson, 1995). This study used a lexical decision task where body size related, food related, neutral words and non words were presented for 35 milliseconds on the screen of a computer monitor. High body dysphoric individuals were found to have a significantly higher percentage of correct identification of body and food related words when compared to a nonsymptomatic control group. No group differences were found for neutral or non words.

Results from the Stroop task, dichotic listening task and lexical decision task suggest that persons diagnosed with an eating disorder selectively attend to body size related stimuli. It might be expected that if additional resources are allocated to the processing of body-related information, these stimuli should receive greater elaboration at encoding, thereby forming stronger associative networks. Greater elaboration, in turn, should cause additional cues that may enhance the recall of body-related stimuli.

Clinical observations suggest that persons with an eating disorder obsess, rehearse, and readily recall information related to body shape and weight. Two recent studies investigating memory biases in eating disorders have found that eating disorder (Sebastian, & Williamson, 1993) and high body dysphoric subjects (Baker, & Williamson, 1993) exhibit a memory bias for body size related stimuli. Sebastian and Williamson (1993) presented subjects with fat, non-fat, and neutral words during the encoding task. Subjects were instructed to imagine themselves in a past, present, or future scene that involved themselves and each word. After a three minute reaction time filler task, subjects completed a free recall test. Results indicated that persons with an eating disorder recalled fat words more frequently than the non-clinical groups. Baker and

Williamson (1993) found that high body dysphoric subjects also exhibited a memory bias for words with a "fatness" connotation. Group differences were not found for non-fat words in both studies. These results are consistent with Bower's theory of emotionality which predicts that emotionally valenced stimuli activate emotion nodes and memories associated with the emotion nodes resulting in subthreshold activation and increased accessibility of related memories (Sebastian, & Williamson, 1993). These results are also consistent with the content specificity hypothesis (Dagleish, & Watts, 1990).

Judgment Biases

Systematic biases in judgment are generally found when judgments concern uncertain events. The predominant bias found in nonclinical subjects tends to be positive, and sometimes self-serving (Williams, et al., 1988). Arkes (1991) described this phenomenon as "judgment under uncertainty". The investigation of biases in judgment has recently been extended to psychological disorders. Anxiety has been associated with an increased tendency to interpret ambiguous information in a threatening fashion (Eysenck, MacLeod, & Mathews, 1987; Eysenck, Mogg, May, Richards, & Mathews, 1991; Mathews, Richards, & Eysenck, 1989). The mechanism underlying this threatening interpretation of ambiguous stimuli is not clear. It may be that a relatively

automated, nonconscious process is involved, in which emotionally disturbed subjects perceive ambiguous events as unambiguously unpleasant or dangerous, or they may be aware of the ambiguity present in such situations, and then select the more unpleasant version for further processing (Williams, et al., 1988).

Williams, et al. (1988) suggested that as an individual becomes more hypervigilent to threat related information (pre-attentive stage), and threatening items become more activated, these items are more likely to prime subsequent ambiguous items thereby disambiguating the items in a negative or threatening fashion. Consequently, by the time a person becomes aware of a stimulus, it may have already been disambiguated as negative (Williams, et al. 1988).

Recently, cognitive methodologies have been used to investigate judgment errors in eating disorder related pathology. The information processing paradigm predicts that ambiguity about body-related or food-related stimuli may set the occasion for misinterpretation of these stimuli by persons diagnosed with an eating disorder (Williamson, Sebastian, & Varnado, 1993). Clinical observation suggests that persons diagnosed with an eating disorder distort information related to their body size and shape in a negative fashion.

Biased perception of overeating has been found in bulimics and compulsive binge eaters (Williamson, Gleaves & Lawson, 1991). This study found that as caloric intake increased, bulimics and compulsive binge eaters had a bias of reporting overeating at a rate much higher than that of obese and normal control groups. One limitation of this study is that the results were based on self-report data. Subjects diagnosed with anorexia and bulimia nervosa have also been found to overestimate current body size in comparison to normal weight control groups (Williamson, Cubic, & Gleaves, 1993).

A recent study used an ambiguous sentence task to investigate judgment errors in body dysphoric individuals (Jackman, Williamson, Netemeyer, & Anderson, in press). Thirty ambiguous sentences were designed to be potentially relevant to persons concerned about body size, health, or athletic performance. These sentences could be interpreted in either a positive or negative fashion. Subjects, all female athletes, were instructed to imagine themselves in the ambiguous situations that were presented via audio tape. A subsequent memory task instructed subjects to read disambiguated sentences and rate each sentence on similarity to their earlier imagery of the ambiguous situations. This study found that high body dysphoric individuals interpreted ambiguous body related situations with a "fear of fatness"

meaning, and low body dysphoric subjects were found to interpret the ambiguous sentences in a positive fashion, i.e., favored a thinness meaning. In addition, the target sentences were rated as more similar than the control sentences; therefore, the bias found in this study was not due to a response bias. The groups did not differ in their interpretation of ambiguous health and athletic competition sentences. These findings indicated that judgment biases may be a result of processing information which is of emotional concern to the individual, and may function to maintain excessive preoccupation with body size.

Arkes (1991) referred to this type of judgment bias as an association-based judgment error. He proposed that association errors occur when irrelevant automatic associations are brought to bear on the decision making process, and these errors are most likely to occur when a memory is highly elaborated. Eating disordered subjects are known to ruminate excessively about their weight concerns, consequently, it is likely that these weight related memories are highly elaborated. Williamson, Cubic, and Gleaves (1993) suggested that association-based errors may occur when body image disturbed subjects are presented with stimuli that activate their body image schema and then lead to automatic processing of information linked to that body image schema. The activation of memories associated with

the body image schema may result in biased judgment about body size, amount of food consumed, etc. (Williamson, Sebastian, & Varnado, 1993). Phase 1 of the present study investigated judgment biases in eating disordered, body dysphoric, and nonsymptomatic subjects.

The second phase of this experiment examined the ability of eating disorder and body dysphoric subjects to modify their distorted automatic thoughts and consequent judgment bias related to body shape and size. Although research investigating the efficacy of cognitive therapy of eating disorders appears promising (Fairburn, Jones, Peveler, Carr, Solomon, O'Connor, Burton, & Hope, 1991), to date there are no studies that have investigated how cognitive therapy effects information processing of concern related stimuli. This study will examine the effects of positive and negative instructions (similar to the instructions used by cognitive therapists to restructure automatic thoughts in a more realistic fashion) on the information processing of body related information.

Arkes (1991) suggests that in order to debias associative or judgment biases, one should instruct the subject in the use of a behavior that will add or alter automatic associations. Positive instructions asking the subjects to imagine themselves in a positive fashion were designed to increase positive associations related to their

body size and shape, and to decrease negative associations. Different associations need to be activated to debias judgment (Arkes, 1991).

Summary of Research Findings and Problem

Clinical observations suggest that persons diagnosed with an eating disorder obsess about body shape and weight. Researchers have hypothesized that obsession with body size may lead to biased processing of body related information. This difference in processing is thought to occur because of pre-attentive biases toward body shape and weight related stimuli (Schotte, McNally, & Turner; Fuller, Williamson, & Anderson, 1995), and memory biases for body related stimuli found in persons diagnosed with an eating disorder (Baker, Williamson, & Sylve, in press; Sebastian, Williamson, & Blouin, in press). To date, the cognitive biases found in eating disordered, and weight preoccupied individuals include attentional biases, memory biases and judgment biases. Research indicates that eating disordered individuals selectively process food and weight related stimuli, or are at least distracted by food and weight related stimuli. This effect is inferred from the interference effect found on the Stroop color naming task (Ben-Tovim, et al., 1988; Fairburn, et al., 1991; Cooper et al, 1992; Channon, et al., 1988), and from results on the dichotic listening task (Schotte, et al., 1990), and lexical decision task (Fuller, 1994). Pre-attentive biases, such as attentional biases or interference effects toward concern

related stimuli, have been hypothesized to be due to automatic processing. During automatic processing, relevant schemata are automatically activated. The result is a strengthening of the activated schema which then becomes more accessible to memory. Consequently, well integrated schemata can be activated when only a few components of the stimulus are present.

As an individual focuses on food and body shape related information, associated memories related to these concerns will become more elaborated and hence more accessible at retrieval. Elaboration is the mechanism which has been hypothesized to underlie negative memory biases found in depression and the eating disorders. Strategic elaboration will strengthen weight related concerns. These weight related memories (e.g., being teased about body weight) may bias the interpretation of concern related ambiguous stimuli. An interpretational bias or judgment bias has been found in anxious subjects (Eysenck, et al., 1987; Eysenck, et al., 1991; Mathews, et al., 1989), agoraphobics (Foa, & McNally, 1987; Stoler, & McNally, 1991) persons who experience panic (Clark, 1988), and more recently in body dysphoric individuals (Jackman, et al., in press). Mathews (1990) proposed that the interpretative bias should be most obvious when there is a match between pre-existing concerns and one meaning of the ambiguous material.

Emotional specificity of interpretative biases has been shown in panic disorder (Clark, 1988) and body dysphoric individuals (Jackman, et al., in press). Although it is not known precisely how this bias occurs, it may occur during the encoding, or retrieval stages or at an intermediate stage.

With regard to threat value of ambiguous stimuli, selection of meaning is required, and this decision is influenced by mood state and current concerns (Mathews, 1990). It has been proposed that concern related stimuli should be partially activated before the presentation of any stimuli. If this is the case, then this would increase the probability of the interpretative process favoring concern related interpretations of ambiguity (Eysenck, & Mogg, 1992). Williams, et al., (1988) has hypothesized that the encoding of threat-related and neutral information involves at least two major precesses: relatively automatic processes occurring at a pre-attentive stage, and elaborate encoding during a more controlled stage.

Eating disorder theorists have recently borrowed the term "schema" from cognitive psychology to explain the development and maintenance of eating disordered cognitions and behavior (Schlundt, & Johnson, 1990; Vitousek, & Hollon, 1990). Vitousek and Hollon (1990) proposed that the core psychopathology of eating disordered individuals is

represented in organized cognitive structures that unite views of the self with beliefs about weight (weight related self-schemata). These schemata are thought to produce systematic errors in the processing of information related to their area of concern (weight and body shape), such as biases in attention, memory and judgment. As weight and shape become the criteria for evaluating the self, both behavior and cognitions may become increasingly stereotypic and more resistant to change (Vitousek, & Hollon, 1990).

A substantial portion of cognitive therapy for eating disorders is designed to reconstruct the automatic thoughts or distorted cognitions that eating disordered individuals exhibit towards food and weight related information. Despite its demonstrated efficacy (Haaga, Ernst, & Dyck, 1991), there is, as yet no direct evidence that cognitive therapy operates by changing the way information is processed (MacLeod, & Mathews, 1991). As part of this experiment, the malleability of eating disordered cognitions will be investigated. If the underlying cognitive structures found in eating disorder are schema like, or they have a highly elaborated network surrounding body shape and weight (as predicted by Bower), it is probable that eating disordered individuals might have greater difficulty changing cognitions about food and weight when compared to nonclinical subjects.

This study used an ambiguous sentence paradigm similar to the paradigm used by Jackman, et al. (in press) to investigate the presence of judgment errors in eating disordered individuals. Three groups of individuals were compared; eating disorder, body dysphoric, and nonsymptomatic control. Clinical observation suggests that persons diagnosed with an eating disorder tend to personalize ambiguous information, react to ambiguous body related information with negative emotion and infer a negative meaning. It was expected that individuals diagnosed with an eating disorder would show a similar bias to that found in body dysphoric subjects. A body dysphoric group was included, in addition to a nonsymptomatic control group, in order to examine whether judgment bias is due to body dysphoria or some characteristic specific to clinical eating disorders.

In the first experiment, subjects listened to series of sentences via tape recorder. They were asked to imagine themselves in each situation, and rate the pleasantness of each imagined situation. Upon completion of the encoding task, a memory task presenting four alternative versions of each ambiguous sentence was administered. The four alternative versions consisted of two sentences that were similar in meaning to the ambiguous sentences (positive and negative target sentences), and two sentences that were

different in meaning from the original sentences (positive and negative control sentences). On the memory task, they were instructed to rate the similarity of the disambiguated sentences to their earlier imaginal interpretations of the ambiguous scenes. They rated similarity on a 4 point scale from (1) very similar to (4) very different.

Recent research suggests that the interpretation of ambiguous information is at least partly an automatic process that occurs during the initial processing of the ambiguous information. Two recent studies have found that anxious subjects imposed a negative interpretation on ambiguous sentences (Calvo, Eysenck, & Estevez, 1994; MacLeod, & Cohen, 1993). Whereas subjects low in anxiety imposed a neutral or less negative meaning. These findings suggest that the interpretation of ambiguous concern related information is processed in an automatic fashion. It was expected that persons diagnosed with an eating disorder and those who are high in body dysphoria would imagine a more negative self-referent scene when asked to imagine themselves in ambiguous weight related situations in comparison to nonsymptomatic control subjects. Consequently, when they were asked to rate the similarity of the four types of disambiguated sentences (positive and negative target, and positive and negative control sentences), it was expected that they would rate these types

of sentences in a different fashion than nonsymptomatic subjects. Specifically, persons diagnosed with an eating disorder and persons who are high in body dysphoria were expected to rate the negative target sentences as more similar to their imagery of the ambiguous scenes than the positive target sentences. The nonsymptomatic group was expected to rate the positive target sentences as more similar than the negative target sentences, thereby exhibiting a positive bias.

If the critical determinant of judgment bias was not body dysphoria, but a variable particular to the clinical condition itself, it was predicted that persons diagnosed with an eating disorder would exhibit a more extreme negative bias (rate the negative interpretations as more similar) than persons who are high in body dysphoria. Body dysphoric individuals would still be expected to rate the negative interpretations as more similar than the nonsymptomatic group, based on previous findings of judgment bias in body dysphoric individuals (Jackman, et al., in press). However, if the critical variable was body dysphoria, then persons diagnosed with an eating disorder and body dysphoric individuals should not differ in their interpretation of ambiguous sentences.

One issue of concern is whether this judgment bias is due to the actual processing of ambiguous body related

information, or whether it is due to a response bias. A response bias would be shown if persons who are high in body dysphoria or diagnosed with an eating disorder rate all negative sentences (target and control) as more similar than the positive sentences. In other words, are these subjects processing the material differently from the nonsymptomatic control subjects, or are they just encoding all weight related information in a negative fashion? It was expected that the body dysphoric and eating disorder subjects would rate the negative control sentences as more similar than the positive control sentences, but less similar than the negative target sentences, as shown in previous research (Jackman, et al., in press).

In phase 2 of the experiment, subjects listened to a second set of audiotaped sentences. Encoding instructions were modified for phase 2 ambiguous sentences. In phase 2, the subjects were again asked to imagine themselves in each situation, however, they were instructed to imagine either a very negative self-referent scene or a very positive self-referent scene. This procedure was designed to investigate the malleability of cognitions. For example, if negative elaboration underlies the recall bias and interpretative bias found in eating related psychopathology; then it may be possible to modify these biases by teaching the subjects to

encode information more positively. This procedure may elucidate the ease by which cognitive change can be made.

Schema theory predicts that persons with an area of concern (i.e., weight preoccupation) who have well developed schemata, and who base their evaluation of themselves on this schema should have more difficulty changing the way they interpret information in their area of concern. It was predicted that persons diagnosed with an eating disorder would have more difficulty changing their interpretation of the ambiguous weight related sentences in comparison to the body dysphoric and nonsymptomatic control groups.

Hypotheses

Hypothesis 1: It was predicted that the eating disorder and body dysphoric subjects would rate their imagery of the ambiguous body related sentences as more unpleasant than the nonsymptomatic control group. Groups were not predicted to differ on the neutral or health related ambiguous sentences.

Hypothesis 2: It was hypothesized that eating disorder and body dysphoric subjects would rate the negative target sentences as more similar to their imagery of the original ambiguous sentences as compared to the nonsymptomatic group.

Hypothesis 3: It was predicted that eating disorder and body dysphoric groups would rate the positive target sentences as less similar to their imagery of the original ambiguous sentences than will the nonsymptomatic group.

Hypothesis 4: It was predicted that eating disorder and body dysphoric groups would rate the negative control sentences as more similar than the positive control sentences, but less similar than the negative target sentences.

Hypothesis 5: It was hypothesized that the judgment bias (rating the negative target sentences as more similar than the positive target sentences) exhibited by the eating disorder and body dysphoric groups would be content specific for body related ambiguous sentences. Consequently, these groups are not expected to rate the negative target health related sentences as more similar than the positive target health related sentences.

Hypothesis 6: During the positive instruction phase of the experiment, it was predicted that the eating disorder and body dysphoric groups would rate the negative target sentences as more similar to their imagery of the ambiguous body related sentences than would the nonsymptomatic control group.

Hypothesis 7: In the positive instruction phase of the experiment, it was hypothesized that eating disorder subjects would have difficulty imagining themselves in a positive fashion. This hypothesis required that eating disorder subjects would rate the negative target sentences

as more similar than the positive target sentences even when given instructions to imagine themselves in a positive fashion.

Method

Subjects

Three groups of women were included in this study: eating disorder, body dysphoric, and a nonsymptomatic control group. The eating disorder group consisted of 30 subjects diagnosed with anorexia nervosa, bulimia nervosa, or eating disorder not otherwise specified. Eating disorder subjects were recruited from the eating disorders programs at the Psychological Services Center of Louisiana State University, and Our Lady of the Lake Regional Medical Center. A structured interview (Interview for Diagnosis of Eating Disorders) was used to determine the presence or absence of an eating disorder based on the Diagnostic and Statistical Manual of Mental Disorders, the fourth edition (DSM-IV; American Psychiatric Association, 1994) criteria for eating disorders.

The DSM-IV criteria for anorexia nervosa include; a) refusal to maintain body weight over a minimally normal weight for age and height, b) intense fear of gaining weight or becoming fat, even though underweight, c) disturbance in the way in which one's body weight or shape is experienced, undue influence of body weight or shape on self-evaluation, or denial of seriousness of the current low body weight, and d) in females, the absence of at least three consecutive

menstrual cycles. Two types of anorexics are described. The restrictive subtype does not regularly engage in binge eating or purging behavior, and the binge eating/purging type does engage in binge eating or purging behavior.

The DSM-IV criteria for bulimia nervosa include recurrent episodes of binge eating which is characterized by the following; 1) eating a large amount of food in a discrete period of time, and 2) a sense of a lack of control over eating during a binge. Other criteria include recurrent inappropriate compensatory behavior in order to prevent weight gain (i.e., self-induced vomiting, laxative or diuretic abuse, fasting or excessive exercise), the binging and inappropriate compensatory behaviors both occur at least twice a week for three months, self-evaluation is unduly influenced by body shape and weight, and the disturbance does not occur exclusively during anorexia nervosa. Two subtypes have been described. The purging type regularly engages in self-induced vomiting or misuse of laxatives or diuretics, and the nonpurging type uses other inappropriate compensatory behaviors, such as fasting or excessive exercise and does not engage in vomiting or misuse of laxatives or diuretics.

Eating disorder not otherwise specified, based on the DSM-IV criteria is defined as disorders of eating that do not meet the criteria for any specific eating disorder. The

inclusion criteria for subthreshold anorexia include a) all the criteria for anorexia nervosa are met except the individual has regular menses, b) all of the criteria for anorexia nervosa except the individual's current weight is in the normal range. The inclusion criteria for subthreshold bulimia nervosa include a) all the criteria for bulimia nervosa except that binges occur less than twice a week or for a duration of less than three months, b) a normal body weight individual who regularly engages in inappropriate compensatory behavior after eating small amounts of food, c) an individual who repeatedly chews and spits out, but does not swallow, large amounts of food.

Thirty females were included in the eating disorder group: 4 anorexia nervosa, 7 bulimia nervosa, 12 eating disorder not otherwise specified-subthreshold bulimia, and 7 eating disorder not otherwise specified-subthreshold anorexia.

The body dysphoric group consisted of thirty female undergraduate students at Louisiana State University, or University of California, Davis who scored 110 or above on the Body Shape Questionnaire (BSQ; Cooper, Taylor, Cooper, & Fairburn, 1987). This cut-off was one standard deviation above the mean for a sample of 535 women from the general population (m=80, sd=30) on the BSQ. The nonsymptomatic control group consisted of thirty female undergraduate

students at Louisiana State University, or University of California, Davis who score at or below 50 on the BSQ. This cut-off score is one standard deviation (sd=30) below the mean (m=80).

Both of the nonclinical groups were interviewed using the Interview for Diagnosis of Eating Disorders. Any subject who met the criteria for an eating disorder as defined by the proposed DSM-IV criteria was excluded from the nonclinical groups and counseled regarding treatment facilities for eating disorders. Fifteen clinical subjects were identified, and included in the clinical sample.

Assessment Instruments

Ambiguous Sentence Task (Encoding Task). In Phase 1 of this experiment, 20 ambiguous sentences and 10 unambiguous neutral sentences (These 30 sentences are shown in Appendix A) were presented via tape recorder. The ambiguous sentences could be interpreted in either a positive or negative fashion. In addition, the ambiguous sentences were constructed to be emotionally relevant to persons concerned with their body size or their health. Ten of the ambiguous sentences were body size related (e.g., After exercising for two hours at a health club, you catch a glimpse of the shape of your hips as you pass by a mirror), and 10 were health related (i.e., Concerned about a small lump on you neck, you are examined by your doctor, who then tells you to relax

while giving you the results). Each of the scenes described a scene in which the subject was doing the action. A self-referencing task was used to facilitate the personal and emotional relevance of the sentences ("you" was used to assist self-reference). Body size and health related ambiguous sentences, and the unambiguous sentences were recorded in random order. Thirty-three sentences (three practice sentences were included) were presented using a cassette recorder. One sentence was read every 15 seconds. Subjects read the following instructions before listening to the ambiguous sentences:

> Please listen carefully to the sentences which are about to be presented on the tape recorder. For each sentence:
>
> 1. Imagine yourself in the situation.
> 2. Rate each sentence on a pleasantness scale:
>
> 1 2 3 4 5 6 7 8 9
> very unpleasant — neutral — very pleasant
>
> Remember to imagine yourself in each situation. If you have any questions, please ask the experimenter now.

Three practice sentences were presented in order to familiarize the subjects with the procedure.

Memory Task. A memory task was presented to the subjects upon completion of the encoding task. Four disambiguated sentences were constructed for each ambiguous sentence; positive and negative "target" sentences which were similar in meaning and structure to the original

sentences, and positive and negative "control" sentences which were different in meaning and structure from the original sentences (These disambiguated sentences are shown in Appendix B). An example of an ambiguous sentence and its four disambiguated versions is presented below:

> Original Ambiguous Sentence: After exercising for two hours at a health club, you get a glimpse of the shape of your hips as you pass by the mirror.
>
> Negative Target: After exercising for two hours at a health club, you get a glimpse of your large hips as you pass by the mirror.
>
> Positive Target: After exercising for two hours at a health club, you get a glimpse of your toned hips as you pass by the mirror.
>
> Negative Control: After swimming laps, you realize that you will never lose the weight you gained.
>
> Positive Control: After swimming laps, you realize that you are beginning to lose weight.

Subjects were asked to rate the similarity of each of the alternatives to their earlier imaginal interpretations of the ambiguous scenes. The control sentences were included in order to assess the presence of a general positive or negative response bias. A response bias is shown if the subject has a tendency to rate the negative sentences (target and control) as more likely than the positive sentences (target and control) or rates the positive sentences as more likely than the negative sentences. A judgment bias will be shown, if subjects consistently rate the negative target sentences as more

similar than the positive target sentences, or the positive targets as more similar than the negative target sentences.

The subjects were given printed sheets with the four disambiguated versions for each ambiguous sentence (see Appendix C). In order to reduce the likelihood of direct comparison between the alternatives, the disambiguated sentences were presented in random order. The original ambiguous and unambiguous sentences were not presented for rating. Health related sentences were included in order to investigate whether the judgment biases are content specific to weight related stimuli. After listening to the ambiguous sentences, the subjects read the following instructions:

> Your job is to rate the similarity of <u>each sentence</u> to one of the sentences that you imagined while you were listening to the tape. Some of the sentences will be very similar to what you imagined while listening to the tape, some will be different, and some you have not heard. Please use the following rating scale in making your judgments:
>
> 1. Very Similar
> 2. Fairly Similar
> 3. Fairly Different
> 4. Very Different

In order to familiarize the subjects with the rating task, three disambiguated sentences were constructed for the practice sentences used in the audio portion of the experiment. The subjects rated a total of 83 sentences.

Pleasantness ratings, similarity ratings, sentence length and readability level of the sentences were

investigated in the Jackman, et al. (in press) study. They found that the negative sentences were similar in unpleasantness and the positive sentences were similar in pleasantness. In addition, the positive and negative target sentences were of comparable similarity to the original sentences, as were the positive and negative control sentences (Jackman, et al., in press). Sentence length and readability (7th to 8th grade reading level) were also controlled.

Phase 2-Positive/Negative Instructions. After completing the original ambiguous sentence task, subjects were asked to listen to a second set of ambiguous sentences, but they were given specific instructions on how to imagine themselves in each situation. Positive instructions were given to half of the subjects in each group, and negative instructions were given to the remaining half. Subjects were randomly assigned to the positive and negative conditions. The positive and negative instructions are presented below:

> Positive: In the next task, you will listen to a second set of sentences. This time as you imagine yourself in each situation, try to imagine yourself in a way which makes you feel as **positively** as possible about yourself in each situation. Please listen carefully to the sentences which are about to be presented on the tape recorder. For each sentence:
>
> 1. Close your eyes and **imagine** yourself feeling **positively** in each of the situations.

2. Rate each situation on the pleasantness scale shown below:

1	2	3	4	5	6	7	8	9
very unpleasant				neutral				very pleasant

Negative: In the next task, you will listen to a second set of sentences. This time as you imagine yourself in each situation, try to imagine yourself in a way which makes you feel as **negatively** as possible about yourself in each situation. Please listen carefully to the sentences which are about to be presented on the tape recorder. For each sentence:

1. Close your eyes and **imagine** yourself feeling **negatively** in each of the situations.
2. Rate each situation on the pleasantness scale shown below:

1	2	3	4	5	6	7	8	9
very unpleasant				neutral				very pleasant

Subjects then completed a subsequent memory task (similar in structure to the one they completed in phase 1). Recorded ambiguous and nonambiguous filler sentences are shown in Appendix D, and disambiguated versions are shown in Appendix E. Phase 2 memory task is presented in Appendix F.

Body Shape Questionnaire (BSQ). The Body Shape Questionnaire (Cooper, Taylor, Cooper, & Fairburn, 1987) was designed to assess the phenomenological experience of "feeling fat", and was used to measure body dysphoria in this study (see Appendix G). The BSQ is a self-report instrument which measures fear of fatness in a wide range of situations, such as discomfort around thin women, and

avoidance of public situations where people may notice there weight and shape, etc. Internal consistency has been reported to range from .70 to .90 (Cooper, et al., 1987). Anorexic (m=141.6) have been found to score higher on the BSQ than control subjects (m=64.6; Hadigan, Walsh, 1991). The present study used cut-off scores based on a sample of 535 normal females (m=80, sd=30) to define a high body dysphoric group and a nonsymptomatic control group (Cooper, et al., 1987). High body dysphoric individuals had to score 110 or above, and the nonsymptomatic group had to score 50 or below on the BSQ.

Eating Attitudes Test (EAT). The EAT (Garner, & Garfinkel, 1979) is a 40 item self-report measure designed to assess anorexic attitudes including restrictive eating patterns, fear of weight gain, and drive for thinness (see Appendix H). A cut-off score of 30 is indicative of anorexia nervosa. Factor analysis has indicated that the EAT consists of three factors; 1) dieting, 2) bulimia, and food preoccupation, and 3) oral control or restraint. Internal consistency was reported to be .79 for anorexic subjects and .94 for clinical anorexics and normal controls. Test-retest reliability is satisfactory (r=.84). The EAT was used to assess restrictive eating behavior.

Bulimia Test-Revised (BULIT-R). The BULIT-R (Smith, & Thelen, 1984) was designed to measure the symptoms of

bulimia nervosa (see Appendix I). A cut-off score of 102 is indicative of bulimic nervosa. Internal consistency and test retest reliability have been reported to be .97 and .95. The BULIT-R was used, in addition to a structured clinical interview, to measure the severity of binging and purgative behavior.

Interview for the Diagnosis of Eating Disorders-Fourth revision (IDED). The original IDED (Williamson, 1990) is a structured clinical interview for diagnosing anorexia and bulimia nervosa based on the DSM-III-R criteria (American Psychiatric Association, 1987). Interrater reliability has been reported at .85, and coefficient alpha is .87. The most recent revised edition (4th) of the IDED was used in the present study to diagnose eating disorders based on the DSM-IV criteria.

Eating Disorder Inventory (EDI-2). Cognitive and behavioral characteristics of anorexia and bulimia nervosa were assessed using the Eating Disorder Inventory-2 (Garner, 1991). The EDI-2 consists of 11 scales; Drive for Thinness (DT), Bulimia (B), Body Dissatisfaction (BD), Ineffectiveness (I), Perfectionism (P), Interpersonal Distrust (ID), Interoceptive Awareness (IA), Maturity Fears (MF), Asceticism (A), Impulse Regulation (IR), and Social Insecurity (SI). This study used only the DT, B, and BD scales. Coefficient alpha was above .69. Test-retest has

been reported to be above .80 for a relatively short period of time.

Body Image Assessment (BIA). The BIA (Williamson, Davis, Goreczny, Bennett, & Gleaves, 1989) was used to assess body image disturbances (see Appendix J). The BIA consists of nine female silhouettes which range in size from very thin to very fat. Subjects are instructed to select their estimate of their Current Body Size (CBS), and then to select their Ideal Body Size (IBS). Test-retest has been reported to be satisfactory for CBS (.90) and IBS (.71).

Beck Depression Inventory (BDI). Depression was assessed using the BDI (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961). Internal consistency and test re test reliability have been reported to be satisfactory (.93 and .75, respectfully).

State Trait Anxiety Inventory (STAI). The STAI was used to measure anxiety (Spielberger, Gorsuch, & Lushene, 1970). Test-retest reliability ranges from .65 to .86.

Shipley Institute of Living Scale. This scale consists of a vocabulary and an abstraction subscale (Pollack, 1942). The total score has been found to reliably estimate a full scale Wechsler Adult Intelligence Scale score. The vocabulary subscale was given as a filler task between the two presentations of the ambiguous sentence task.

Procedure

Each subject was administered the protocol individually. Initially they were asked to sign a consent form (see Appendix K). Next their height was measured in centimeters, and their body weight was measured in kilograms. Height and weight were then converted to body mass index (BMI), using the formula: BMI = weight (kg)/ height^2. Subjects were interviewed using the IDED. They were then administered the BIA, and a battery of tests: EAT, BULIT-R, EDI, BSQ, BDI, and STAI. Finally, the subjects completed phase 1 of the ambiguous sentence task, followed by the filler vocabulary task. Lastly, they completed phase 2 of the ambiguous sentence task which used positive or negative instructions.

Results

Subject Characteristics

Three one-way multivariate analyses of variance (MANOVA) were performed on demographic and descriptive data in order to evaluate differences as a function of group membership (eating disorder, body dysphoric and nonsymptomatic control groups). Follow up Scheffe tests (alpha = .05) were performed on significant MANOVAS. Wilk's Lambda was used to interpret the results of all MANOVAs. Dependent variables were organized into three groups (demographic variables, eating disorder measures, general psychopathology measures) based upon the characteristics measured by each variable. Groups differed on demographic variables, F (6, 170) = 7.11, $p < .0001$, eating disorder measures, F (22, 154) = 29.47, $p < .0001$, and general psychopathology measures, F (6, 170) = 12.65, $p < .0001$. Means are summarized in Table 1. Post hoc Scheffe tests indicated that groups did not differ on age or vocabulary skills (voc), but differed on body mass index (BMI) as a function of group. The nonsymptomatic control group had a significantly lower BMI (19.6) than both the eating disorder (21.6) and body dysphoric groups (23.2). Although there was a significant difference among groups, the discrepancy between means was small and the BMI values

for all 3 groups were within the normal range. This small difference in BMI was interpreted as being clinically insignificant.

In general, the eating disorder group scored higher on the eating disorder measures than the body dysphoric group, and the body dysphoric group scored higher than the nonsymptomatic control group. The eating disorder group scored significantly higher than both the body dysphoric group and nonsymptomatic control groups on the following eating disorder measures; EAT, BULIT-R, BSQ, DT subscale of the EDI, and the Anorexia (AN) and Bulimia (BN) subscales of the IDED. On the Body Dissatisfaction (BD) subscale of the EDI, both the eating disorder and the body dysphoric group scored higher than the nonsymptomatic control group. The body dysphoric group scored significantly higher than the nonsymptomatic group on the EAT, BULIT-R, BSQ, DT subscale of the EDI, and Anorexia (AN) and Bulimia (BN) subscales of the IDED. The eating disorder group scored higher than both the body dysphoric and nonsymptomatic control groups on the Binge-Eating (BE) subscale of the IDED, and on the Bulimia (B) subscale of the EDI. The eating disorder group also scored higher on the current body size (CBS) and lower on the ideal body size (IBS) portions of the BIA. Higher CBS scores indicate that the eating disorder group perceived themselves as larger than both the control groups did (even

Table 1

Group Means of Subject Characteristics

	Eating Disorder	Body Dysphoric	Nonsymptomatic Control	F value
Demographic Variables				
Age	24.37[a] (8.29)	22.87[a] (3.97)	20.63[a] (6.44)	2.52
BMI	21.6[a] (2.9)	23.17[a] (2.6)	19.57[b] (2.08)	15.1
Voc	26.9[a] (9.1)	29.63[a] (7.24)	30.5[a] (4.98)	2.0
Eating Disorder Measures				
EAT	46.93[a] (20.66)	26.37[b] (14.5)	6.1[c] (3.19)	58.0
BULIT	89.7[a] (19.96)	64.3[b] (17.8)	33.27[c] (3.69)	98.7
BSQ	149.93[a] (12.34)	131.8[b] (15.83)	46.63c (17.75)	381.3
CBS	62.17[a] (13.15)	57.37[a] (15.15)	42.23[b] (8.0)	20.1
IBS	40.87[a] (14.96)	50.37[b] (11.1)	50.83[b] (11.44)	5.98
AN	16.83[a] (4.3)	11.6[b] (2.54)	6.23[c] (.62)	99.8
BE	20.43[a] (9.75)	12.13[b] (7.0)	8.03[b] (.18)	24.9

(table con'd)

	Eating Disorder	Body Dysphoric	Nonsympotmatic Control	F value
BN	19.43[a] (3.97)	11.67[b] (3.06)	7.03[c] (.18)	140.2
DT	14.33[a] (4.74)	9.1[b] (5.7)	.43[c] (1.3)	79.2
B	5.3[a] (4.4)	1.9[b] (3.3)	.3[b] (.65)	19.4
BD	20.87[a] (6.1)	19.2[a] (6.27)	1.2[b] (2.27)	130.9
	General Psychopathology Measures			
BDI	22.3[a] (13.38)	13.43[b] (7.99)	4.13[c] (5.07)	27.7
State	61.77[a] (10.55)	55.67[b] (7.73)	44.2[c] (7.95)	30.6
Trait	65.93[a] (10.24)	61.23[a] (12.64)	45.67[b] (9.28)	28.9

Note. BMI = Body Mass Index, Voc = Shipley Vocabulary subscale, EAT = Eating Attitudes Test, BULIT = Bulimia Test, BSQ = Body Shape Questionnaire, CBS = Current Body Size, IBS = Ideal Body Size, AN = Anorexia subscale of IDED, BE = Binge Eating subscale of IDED, BN = Bulimia Subscale of IDED, DT = Drive for Thinness subscale of EDI, B = Bulimia subscale of EDI, BD = Body Dissatisfaction subscale of EDI, BDI = Beck Depression Inventory, State = State Anxiety subscale of STAI, Trait = Trait Anxiety subscale of STAI.

Different superscripts indicate that group means differ ($p < .05$).

though BMI is not clinically significantly different). Lower IBS scores suggest that the eating disorder group desires to be thinner than either of the control groups.

The eating disorder group scored significantly higher on measures of depression (BDI), current anxiety (State), and long-term anxiety (Trait) in comparison to the body dysphoric or nonsymptomatic control groups. The body dysphoric group scored higher than the nonsymptomatic control group on the BDI, and State anxiety measures, but no differences were found on long-term (Trait) anxiety.

Pleasantness Ratings

In general, hypotheses will be tested using MANOVA. Significant MANOVAs will be followed by contrast analyses.

After listening to each ambiguous sentence, and imagining themselves in each situation, subjects rated the pleasantness of each situation on a 9 point scale (1=very unpleasant, 9=very pleasant). The ratings of the three types of sentences (body related, health related, and unambiguous neutral sentences) were submitted as dependent variables in a one-way MANOVA with group as the independent variable. Results of the MANOVA indicated a main effect for group, $\underline{F}(6, 170) = 22.38$, $\underline{p} < .0001$. Results supported hypothesis 1, since the eating disorder, $\underline{F}(1, 87) = 156.6$, $\underline{p} < .0001$, and body dysphoric subjects, $\underline{F}(1, 87) = 97.6$, $\underline{P} < .0001$, rated their imagery of the ambiguous body related

Table 2

Mean Pleasantness Ratings

Sentence Type	Eating Disorder	Body Dysphoric	Nonsymptomatic Control
Body Related	2.6[a] (1.2)	3.3[b] (1.1)	5.9[c] (.82)
Health Related	3.2[a] (.82)	3.1[a] (.56)	3.2[a] (.81)
Neutral	6.2[a] (.74)	6.4[a] (.58)	6.4[a] (.56)

Note: Different superscripts indicate that group means differ.

sentences as more unpleasant than did the nonsymptomatic control group. No differences were found on the health related ambiguous sentences or the neutral sentences. Group means are summarized in Table 2. Within group contrasts found that the eating disorder group rated their imagery of the body related sentences as more unpleasant than the health related , $F(1, 87) = 9.6$, $p < .003$, or neutral sentences, $F(1, 87) = 362.7$, $p < .0001$. No differences were found for the body dysphoric group, $F(1, 87) = .94$, $p < .3$, on the health or body related sentences. Imagery of the neutral sentences was rated as more pleasant than either the health or body related sentences by all groups.

Similarity Ratings of Body Related Sentences

After imagining themselves in a series of ambiguous body related situations, subjects completed a memory task. On this memory task, subjects were asked to rate the similarity of each disambiguated sentence to their imaginal interpretations of the ambiguous situations presented via tape recorder. Hypothesis 1 predicted that the eating disorder and body dysphoric groups would rate the negative body related targets as more similar to their imagery of the ambiguous situations than would the nonsymptomatic control group. This hypothesis was evaluated using a one-way MANOVA followed by contrast analyses. The similarity scores of the four types of disambiguated body related sentences (negative

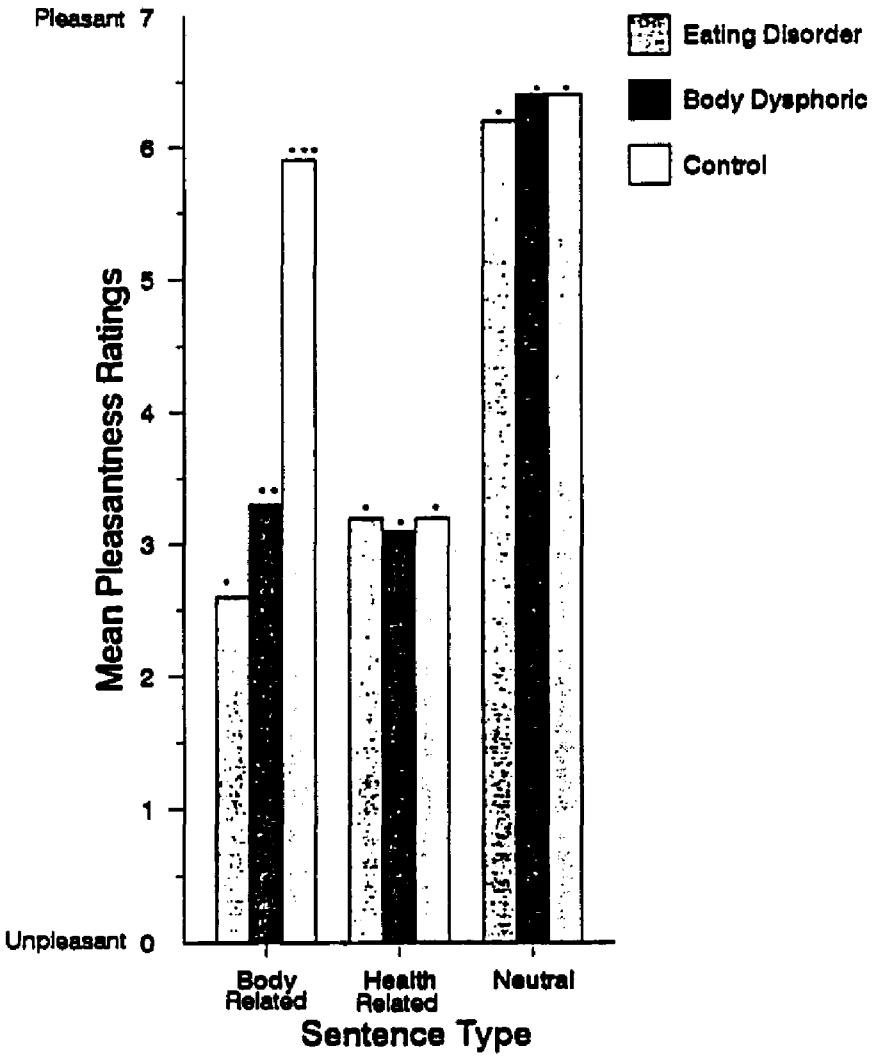

Figure 1

Mean Pleasantness Ratings as a Function of Group

Note: Different numbers of * indicate group differences.

target, positive target, negative control, and positive control) were submitted as the dependent variables in this MANOVA with group as the independent variable. Using Wilk's Lambda (alpha = .05), results of the MANOVA indicated that a significant main effect for group, $F(8, 168) = 11.8$, $p < .0001$. Between group contrast analyses showed that both ratings of the eating disorder group, $F(4, 84) = 24.4$, $p < .0001$, and the body dysphoric group, $F(4, 84) = 18.6$, $p < .0001$ were significantly different than that of the nonsymptomatic group. The patterns of ratings exhibited by the eating disorder group and the body dysphoric group were not significantly different, $F(4, 84) = 1.03$, $p > .4$. Group means are summarized in Table 3, and are depicted in Figure 2.

Contrast analyses found that both the eating disorder, $F(1, 87) = 80.7$, $p < .0001$, and body dysphoric groups, $F(1, 87) = 65$, $p < .0001$, rated the negative target sentences as more similar to their imagery of the original ambiguous sentences in comparison to the nonsymptomatic control group. These results provide support for hypothesis 2 which predicted that the eating disorder and body dysphoric groups would rate the negative target sentences as more similar to their imagery of the original ambiguous sentences than would the nonsymptomatic control group. Both the eating disorder and body dysphoric groups exhibited a

Table 3

Mean Similarity Ratings for Body Related Sentences

Differences Between Groups

Sentence Type	Eating Disorder	Body Dysphoric	Nonsymptomatic Control
Negative Target	1.6[a] (.64)	1.8[a] (.5)	3.0[b] (.58)
Positive Target	3.3[a] (.58)	3.0[a] (.67)	2.2[b] (.39)
Negative Control	2.8[a] (1.1)	3.0[a] (.89)	3.9[b] (.2)
Positive Control	3.6[a] (.41)	3.6[a] (.42)	3.7[a] (.35)

Note: Different superscripts indicate that group means differ ($p < .05$).

Differences Within Each Group

Group	-Target	+Target	-Control	+Control
ED	1.6[a]	3.3[b]	2.8[c]	3.6[d]
BD	1.8[a]	3.0[b]	3.0[b]	3.6[c]
NC	3.0[a]	2.2[b]	3.9[c]	3.7[c]

Note: Different superscripts indicate within group differences. Abbreviations: ED = Eating Disorder, BD = Body Dysphoric, NC = Nonsymptomatic Control.

negative judgment bias favoring the fatness interpretations (negative target sentences).

Hypothesis 3 predicted that the nonsymptomatic group would rate the positive target sentences as more similar to their imagery of the original ambiguous sentences than would the eating disorder or body dysphoric groups. This hypothesis was also supported, as shown in Table 3 and Figure 2. Results indicated that the nonsymptomatic group rated the positive target sentences as more similar to their imagery than did the eating disorder, $F(1, 87) = 59.3$, $p < .0001$, and body dysphoric groups, $F(1, 87) = 32.9$, $p < .0001$. The nonsymptomatic group exhibited a positive judgment bias favoring the thinness interpretations.

Hypothesis 4 predicted that eating disorder and body dysphoric groups would rate the negative control sentences as more similar than the positive control sentences, but less similar than the negative target sentences. Within group contrast analyses supported this hypothesis. Results indicated that the eating disorder, $F(1, 87) = 37.7$, $p < .0001$, and body dysphoric groups, $F(1, 87) = 17.9$, $P < .0001$, rated the negative control sentences as more similar than the positive control sentences. This suggests that the eating disorder and body dysphoric groups exhibited a response bias where negative sentences were rated more similar than the positive sentences. However, both the

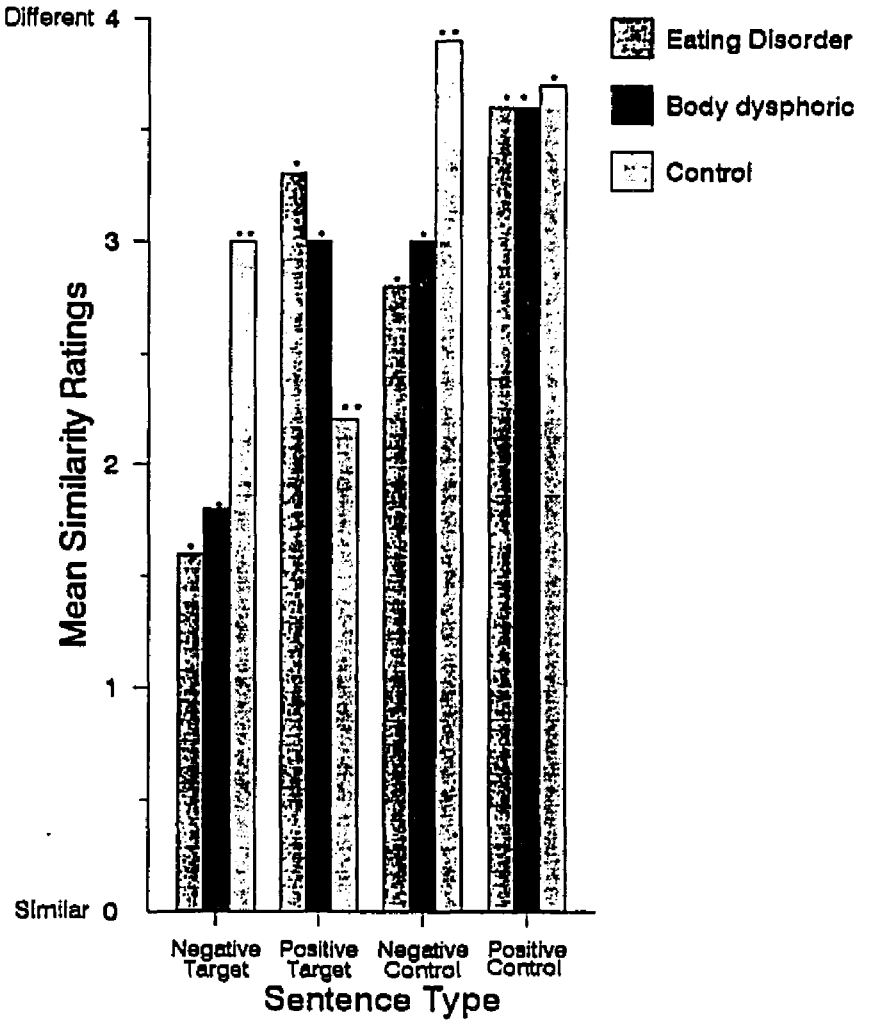

Figure 2

Mean Similarity Ratings as a Function of Group for Body Related Sentences

Note: Different numbers of * indicate group differences.

eating disorder, $F(1, 87) = 76$, $p < .0001$, and body dysphoric groups, $F(1, 87) = 81.6$, $p < .0001$, rated the negative target sentences as more similar than the negative control sentences. These results suggest that a negative judgment bias was exhibited by both groups.

Similarity Ratings of Health Related Sentences

Hypothesis 5 predicted that the negative judgement bias exhibited by the eating disorder and body dysphoric groups would be content specific occurring only on the body related ambiguous sentences, not on the health related ambiguous sentences. MANOVA was used to test the association of group membership with four types of disambiguated health related sentences (negative target, positive target, negative control, positive control sentences). Results of this MANOVA indicated a main effect for group, $F(8, 168) = 2.08$, $p < .04$. However, the only significant differences were found for the control sentences, no differences were found on the target sentences. Consequently, hypothesis 5 was supported by this finding.

Within group analyses found that all three groups rated the positive target sentences as most similar to the original ambiguous sentences, followed by the negative target sentences. Means are summarized in Table 4.

Table 4

Mean Similarity Ratings for Health Related Sentences

Sentence Type	Eating Disorder	Body Dysphoric	Nonsymptomatic Control
Negative Target	2.7[a] (.42)	2.6[a] (.46)	2.8[a] (.53)
Positive Target	2.1[a] (2.8)	2.0[a] (3.97)	1.9[a] (.4)
Negative Control	3.4[ab] (.53)	3.3[a] (.56)	3.7[b] (.23)
Positive Control	3.3[ab] (.56)	3.3[a] (.53)	3.6[b] (.35)

Note: Different superscripts indicate that group means differ.

Pleasantness Ratings in Phase 2

In the second ambiguous task, two instructional conditions were used. Added to the original instructions used in the first ambiguous task was the phrase "imagine yourself in a way which makes you feel as positive (or negative) about yourself in each situation". Half of the subjects in each group received that positive instructions, and the other half received the negative instructions. Two MANOVAS were performed, one for each type of instructional condition. Pleasantness scores for body related, health related and neutral sentences were used as the dependent variables, and group was the independent variable. Ratings from the body related, health related, and neutral sentences from the first task were included in order to compare each groups ability to change their cognitions when instructed to do so.

Positive instructions. Results of the MANOVA examining the positive instructional condition found a significant main effect for group, $F(12, 74) = 5.41$, $p < .0001$. Between group contrasts indicated that the pleasantness ratings of nonsymptomatic group differed significantly from the ratings of eating disorder group, $F(6, 37) = 13.14$, $p < .0001$, and body dysphoric group, $F(6, 37) = 8.4$, $p < .0001$. No differences were found when comparing the ratings of the eating disorder group to the ratings of the body dysphoric

Table 5

Mean Pleasantness Ratings-Positive Instructions

Sentence Type	Eating Disorder	Body Dysphoric	Nonsymptomatic Control
Body Related	4.3[a] (.25)	4.9[a] (.17)	5.9[b] (.58)
Health Related	4.8[a] (.12)	4.9[a] (.94)	5.0[a] (.82)
Neutral	7.6[a] (.6)	7.4[a] (.83)	7.3[a] (.74)

Note: Different superscripts indicate that group means differ.

group, $F(6, 37) = .8186$, $p > .60$. Results are summarized in Table 5. Contrast analyses indicated group differences only on the body related sentences. The eating disorder group, $F(1, 42) = 5.9$, $p < .02$, rated their imagery of the body related sentences as more unpleasant than did the nonsymptomatic group. No differences were found between the body dysphoric and nonsymptomatic group for body related sentences, $F(1, 42) = 2$, $p < .2$.

Within group contrasts comparing pleasantness ratings across phases was also computed. Both the eating disorder group and the body dysphoric group rated their imagery of the body related, health related and neutral sentences as more pleasant during the positive instructional phase as compared to phase 1. These results indicate that the eating disorder and body dysphoric groups were able to modify their imaginal interpretations when instructed to imagine themselves positively. The nonsymptomatic group rated their imagery of the health related and neutral sentences as more pleasant on the positive instructional condition as compared to the initial task. No differences were found for the nonsymptomatic group on the body related sentences. Results are summarized in Table 6.

Negative instructions. Results of the MANOVA examining the negative instructional condition found a significant main effect for group, $F(12, 74) = 7.91$, $p < .0001$. Between

Table 6

Mean Pleasantness Ratings Across Phase 1 and Phase 2-Positive Instructions

	Task 1	Task 2
Eating Disorder		
Body Related	2.4[a]	4.3[b]
Health Related	3.1[a]	4.8[b]
Neutral	6.0[a]	7.6[b]
Body Dysphoric		
Body Related	3.1[a]	4.9[b]
Health Related	3.1[a]	4.9[b]
Neutral	6.3[a]	7.4[b]
Nonsymptomatic Control		
Body Related	5.5[a]	5.9[a]
Health Related	3.0[a]	5.0[b]
Neutral	6.3[a]	7.3[b]

Note: Different superscripts indicate that group means differ across phase 1 and phase 2.

group contrasts indicated that pleasantness ratings of the nonsymptomatic group differed from the ratings of the eating disorder group, $F(6, 37) = 18.36$, $p < .0001$, and body dysphoric group, $F(6, 37) = 13.33$, $p < .0001$. The ratings from the eating disorder and body dysphoric groups were not significantly different, $F(6, 37) = 1.55$, $p > .15$. Results are illustrated in Table 7. Contrast analyses indicated group differences on the body related and health related sentences, but not on the neutral sentences. The eating disorder, $F(1, 42) = 35.3$, $p < .0001$, and body dysphoric groups, $F(1, 42) = 40.2$, $p < .0001$, rated the body related sentences as more unpleasant than did the nonsymptomatic control group. The body dysphoric group rated the health related sentences as more unpleasant in comparison to the nonsymptomatic control group, $F(1, 42) = 11.4$, $p < .002$.

Both the eating disorder group and body dysphoric group rated the body related, health related, and neutral sentences as more unpleasant in the negative instructional condition as compared to the initial task. The nonsymptomatic group rated the body related and neutral sentences as more unpleasant in the negative instructional condition than on the initial task. The groups were able to modify their imagery of the ambiguous sentences when asked to imagine themselves negatively, with the exception of the

Table 7

Mean Pleasantness Ratings-Negative Instructions

Sentence Type	Eating Disorder	Body Dysphoric	Nonsymptomatic Control
Body Related	2.0[a] (1.0)	1.8[a] (.56)	4.3[b] (1.4)
Health Related	2.7[a] (.87)	2.2[ab] (.41)	3.2[ac] (1.0)
Neutral	5.6[a] (1.5)	5.2[a] (.94)	5.5[a] (1.1)

Note: Different superscripts indicate that group means differ.

Table 8

Mean Pleasantness Ratings Across Phase 1 and Phase 2-Negative Instructions

	Eating Disorder	
	Task 1	Task 2
Body Related	2.8[a]	2.0[b]
Health Related	3.3[a]	2.7[b]
Neutral	6.4[a]	5.6[b]
	Body Dysphoric	
	Task 1	Task 2
Body Related	3.4[a]	1.8[b]
Health Related	3.0[a]	2.2[b]
Neutral	6.4[a]	5.2[b]
	Nonsymptomatic Control	
	Task 1	Task 2
Body Related	6.3[a]	4.3[b]
Health Related	3.3[a]	3.2[a]
Neutral	6.6[a]	5.5[b]

Note: Different superscripts indicate group differences across phase 1 and phase 2.

health related situations for the nonsymptomatic group. Results are summarized in Table 8.

Effects of Positive and Negative Instructions on Judgment Biases

In the second phase of the experiment, two instructional conditions were used during encoding. Both conditions used the original instructions with the addition of asking the subject to "imagine yourself in a way which makes you feel as positively (negatively) as possible about yourself in each situation. Half of the subjects in each group received the positive instructions, and the other half received the negative instructions (15 per group). Two MANOVAS were performed, one for each type of instructional condition. Similarity scores of the negative and positive target sentences from both ambiguous tasks were used as the dependent variables, and group membership was the independent variable. Ratings of the negative and positive target sentences from phase 1 (initial administration of the ambiguous task) were included in order to compare each group's ability to change their cognitions when instructed to do so.

Positive instructions. In the test of positive instructions, a main effect for group was found, $F(8, 78) = 7.3$, $p < .0001$. Between group contrasts indicated that the ratings of the nonsymptomatic group were significantly

Table 9

Mean Similarity Ratings-Positive Instructions

Sentence Type	Eating Disorder	Body Dysphoric	Nonsymptomatic Control
Negative Target	2.0[a] (.71)	2.3[a] (.94)	3.2[b] (.64)
Positive Target	3.1[a] (.71)	2.7[ab] (.81)	2.3[b] (.41)

Note: Different superscripts indicate that group means differ.

different from the ratings of the eating disorder group, $F(4, 39) = 15.24$, $p < .0001$, and the body dysphoric group, $F(4, 39) = 9.98$, $p < .0001$. Ratings of the eating disorder group and body dysphoric group were not significantly different, $F(4, 39) = .94$, $p > .45$. Group means are shown in Table 9. Hypothesis 6 predicted that the eating disorder and body dysphoric groups when given positive instructions would continue to rate the negative target sentences as more similar to their imagery of the ambiguous sentences than would the nonsymptomatic group. As predicted, the eating disorder, $F(1, 42) = 18.5$, $p < .0001$, and body dysphoric groups, $F(1, 42) = 11.8$, $p < .001$, rated the negative targets as more similar to their imagery of the original ambiguous sentences than did the nonsymptomatic group. The nonsymptomatic group rated the positive targets as more similar to their imagery of the original ambiguous sentences when compared to the eating disorder group, $F(1, 42) = 9.9$, $p < .003$.

Hypothesis 7 predicted that the eating disorder group would have more difficulty changing their style of interpretation than would the body dysphoric or nonsymptomatic groups. This hypothesis required that the eating disorder group rate the negative target sentences as more similar than the positive target sentences even when instructed to imagine themselves in a positive fashion.

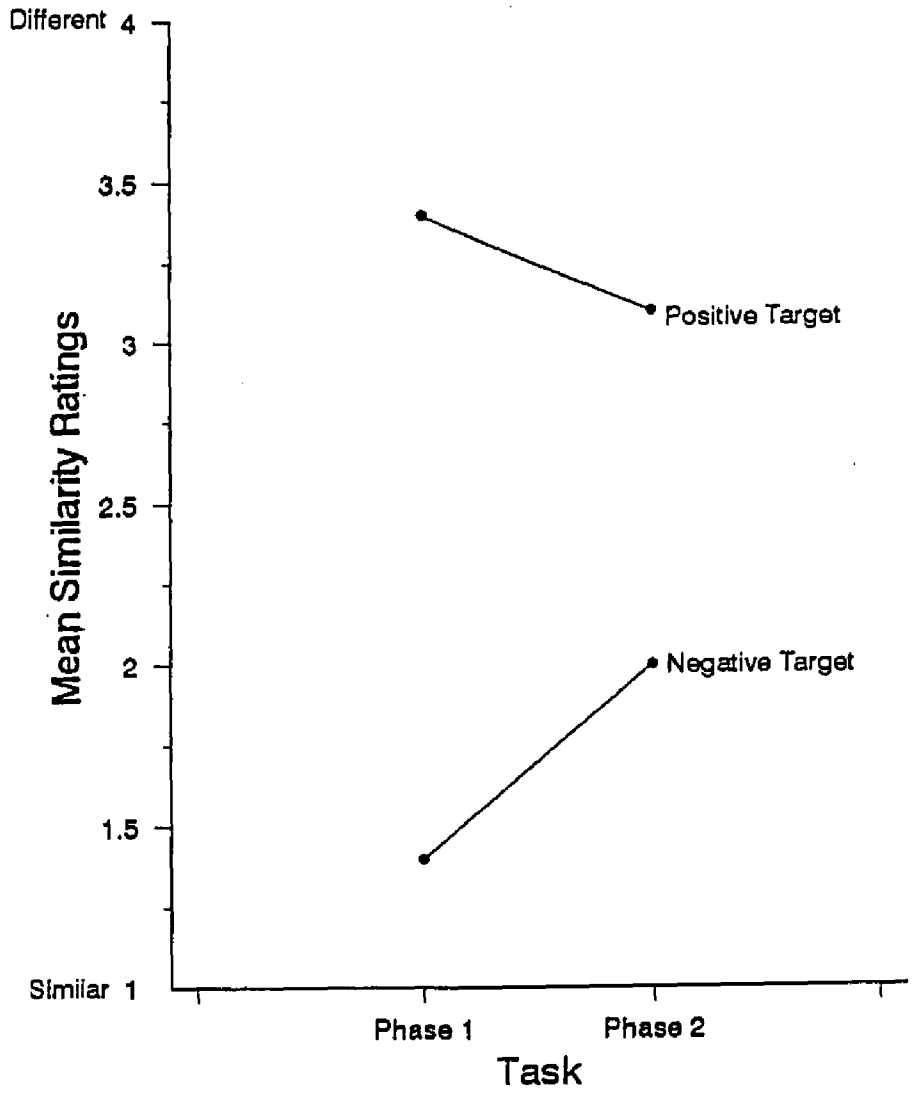

Figure 3

Mean Similarity Ratings from Phase 1 and Phase 2 for the Eating Disorder Group-Positive Instructions

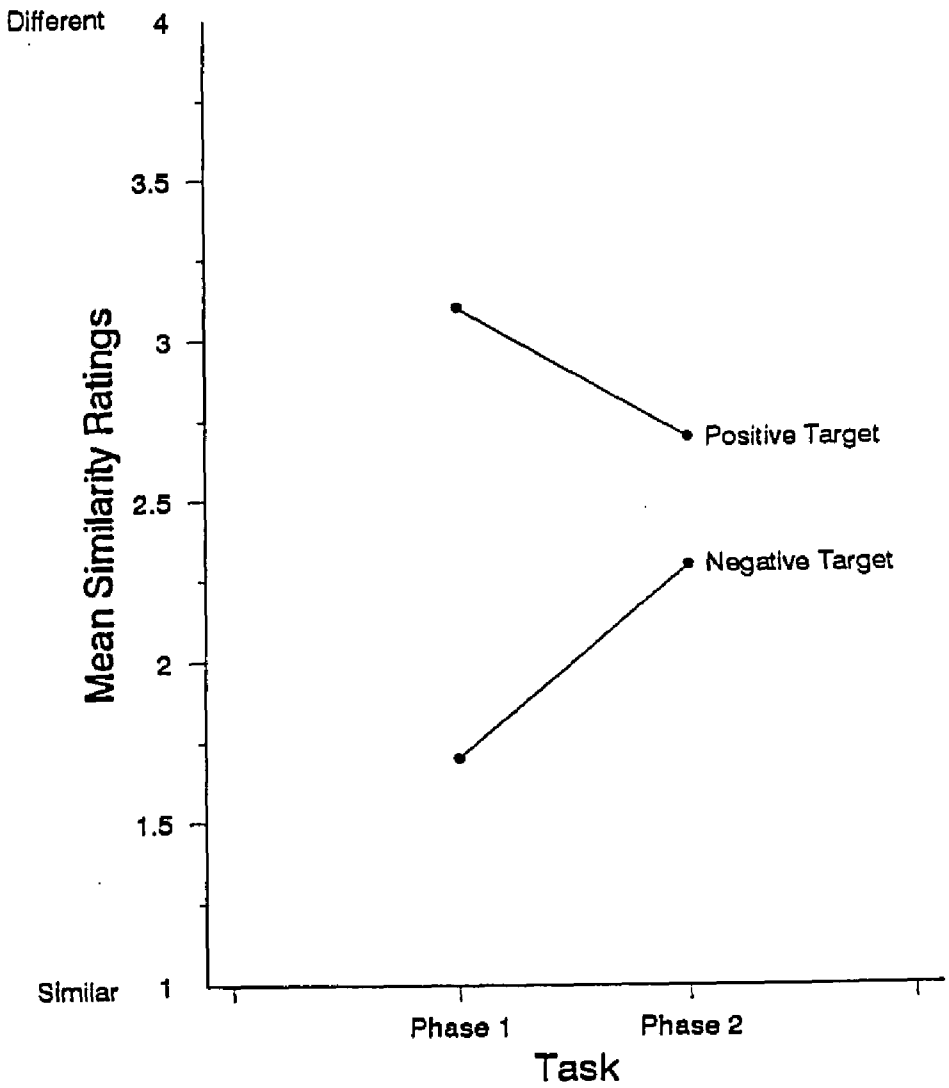

Figure 4

Mean Similarity Ratings from Phase 1 and Phase 2 for the Body Dysphoric Group-Positive Instructions

Table 10

Mean Similarity Ratings Across Phase 1 and Phase 2-Positive Instructions

	Eating Disorder	
	Task 1	Task 2
Negative Target	1.4[a]	2.0[b]
Positive Target	3.4[a]	3.1[a]
	Body Dysphoric	
Negative Target	1.7[a]	2.3[b]
Positive Target	3.1[a]	2.7[b]
	Nonsymptomatic Control	
Negative Target	3.0[a]	3.2[a]
Positive Target	2.3[a]	2.3[a]

Note: Different superscripts indicate that group means differ across phase 1 and phase 2.

Support for this hypothesis is summarized in Table 10, and Figure 3. Within group contrasts examining the pattern of ratings exhibited by the eating disorder group found no significant difference between their initial (phase 1) rating of the positive target sentences and the rating given during phase 2-positive instructions, $F(1, 42) = 4.0$, $p < .052$. However, they did rate the negative targets as less similar in phase 2 in comparison to phase 1, $F(1, 42) = 13.0$, $p < .0008$. During phase 2, the eating disorder group still rated the negative target sentences as more similar than the positive target sentences even when given positive instructions, $F(1, 42) = 9.4$, $p < .003$. These results indicate that when instructed to imagine themselves positively, they were able to modify their ratings of the their imagery somewhat, but they still interpreted the ambiguous sentences in a negative fashion. Consequently, the prediction that the eating disorder subjects would have difficulty changing their cognitions was supported.

Analyses examining the ratings of the body dysphoric group found that they rated the positive targets as more similar, $F(1, 42) = 4.9$, $p < .03$, and the negative targets as less similar, $F(1, 42) = 10.7$, $p < .002$, when given instructions to imagine themselves positively as compared to their ratings on the initial ambiguous sentence task (neutral instructions). Results are illustrated in Table

10, and Figure 4. No significant differences were found in the ratings of the positive and negative target sentences during the positive instructional task, $F(1, 42) = 1.8$, $p < .2$. The body dysphoric group was able to imagine themselves more positively, and less negatively. Consequently, the positive instructions appear to have neutralized their negative judgment bias.

Comparisons of the ratings of the nonsymptomatic control group showed no significant differences for negative or positive target sentences as a function of positive instructions.

Negative instructions. In the test of negative instructions, a main effect for group was found, $F(8, 78) = 7.3$, $p < .0001$. Between group contrasts indicated that the ratings of the nonsymptomatic group was significantly different from the ratings of the eating disorder group, $F(4, 39) = 11.94$, $p < .0001$, and from the body dysphoric group, $F(4, 39) = 13.31$, $p < .0001$. No differences were found between the eating disorder and body dysphoric groups, $F(4, 39) = 1.46$, $p < .20$. Group means are illustrated in Table 11. Between group contrast analyses were also performed for the negative and positive target sentences following negative instructions. When instructed to imagine themselves in a negative fashion, the eating disorder, $F(1, 42) = 38.5$, $p < .0001$, and body dysphoric groups,

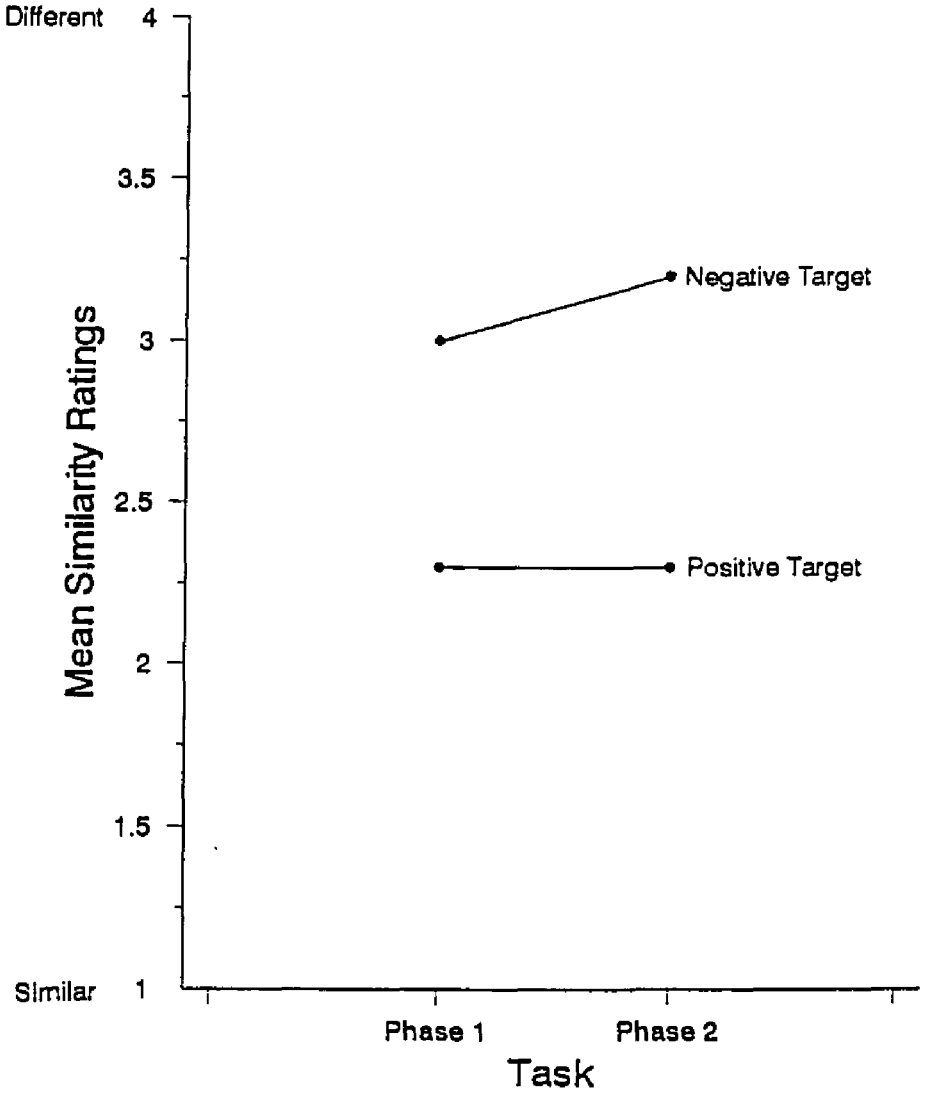

Figure 5

Mean Similarity Ratings from Phase 1 and Phase 2 for the Nonsymptomatic Control Group-Positive Instructions

$F(1, 42) = 54.6$, $p < .0001$, rated the negative target sentences as more similar to the original ambiguous sentences than did the nonsymptomatic control group. Whereas, when instructed to imagine themselves negatively, the nonsymptomatic control group rated the positive target sentences as more similar to the their imagery than did the body dysphoric, $F(1, 42) = 9.7$, $p < .003$, and eating disorder groups, $F(1, 42) = 20$, $p < .0001$. These results are summarized in Table 12 and illustrated in Figure 6.

Within group contrast analyses examining the ratings of the nonsymptomatic group found no differences between their initial rating of the negative targets and the rating given during the negative instructional condition, $F(1, 42) = .16$, $p < .7$. They rated the positive targets as less similar to the original ambiguous sentences after negative instructions as compared to the initial task, $F(1, 42) = 11.8$, $p < .001$. No difference was found for the rating for the positive and negative targets during the negative instruction phase for the nonsymptomatic group, $F(1, 42) = 2.6$, $p < .1$. Consequently, the negative instructions had the effect of neutralizing their positive bias.

Table 11

Mean Similarity Ratings-Negative Instructions

Sentence Type	Eating Disorder	Body Dysphoric	Nonsymptomatic Control
Negative Target	1.8[a] (.65)	1.5[a] (.42)	3.0[b] (.47)
Positive Target	3.5[a] (.61)	3.2[a] (.57)	2.6[b] (.46)

Note: Different superscripts indicate that group means differ.

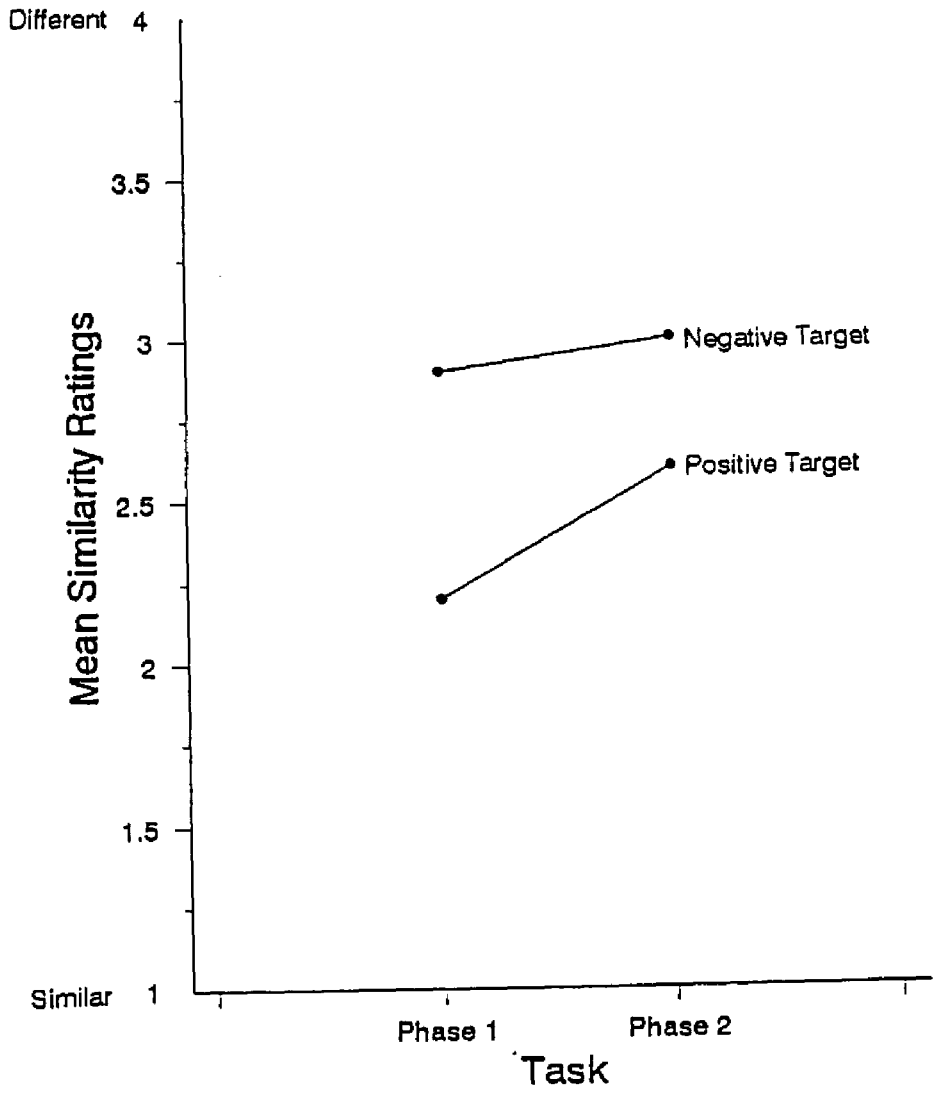

Figure 6

Mean Similarity Ratings from Phase 1 and Phase 2 for the Nonsymptomatic Control Group-Negative Instructions

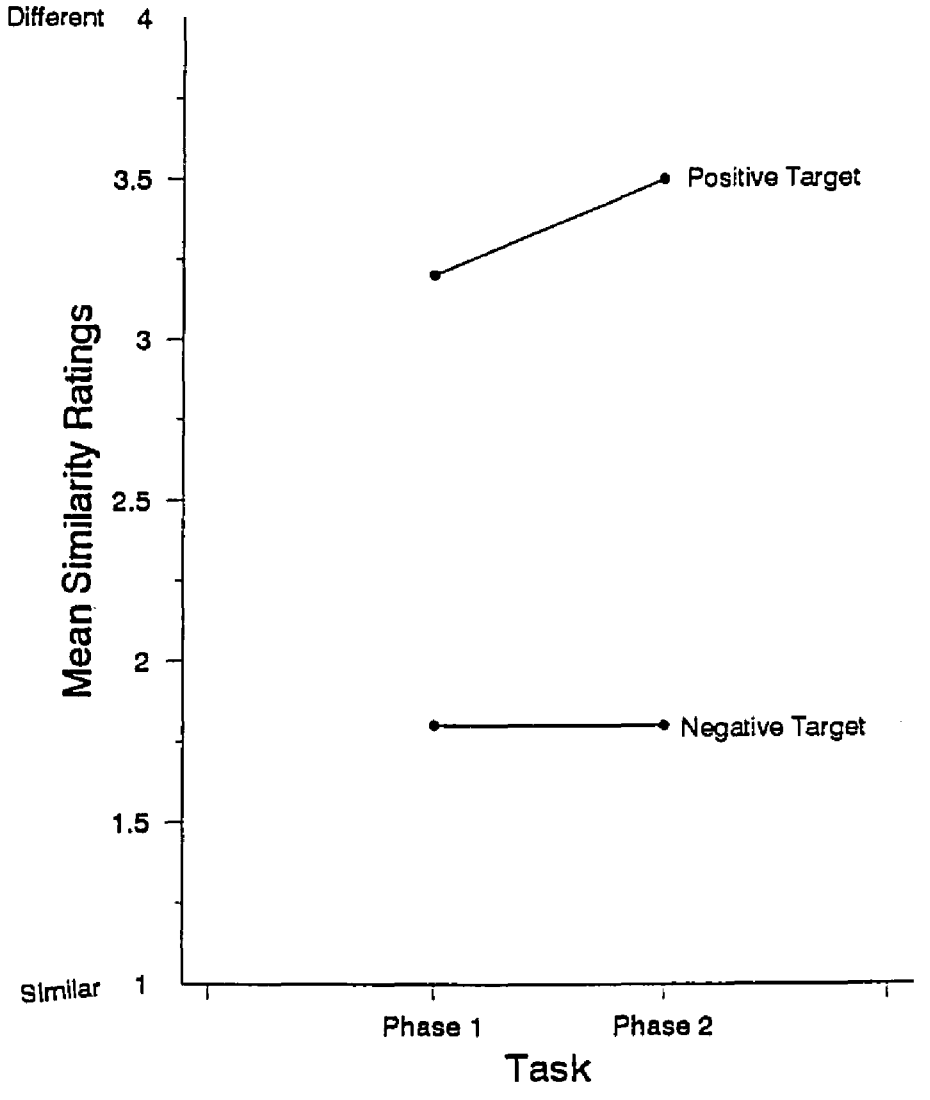

Figure 7

Mean Similarity Ratings from Phase 1 and Phase 2 for the Eating Disorder Group-Negative Instructions

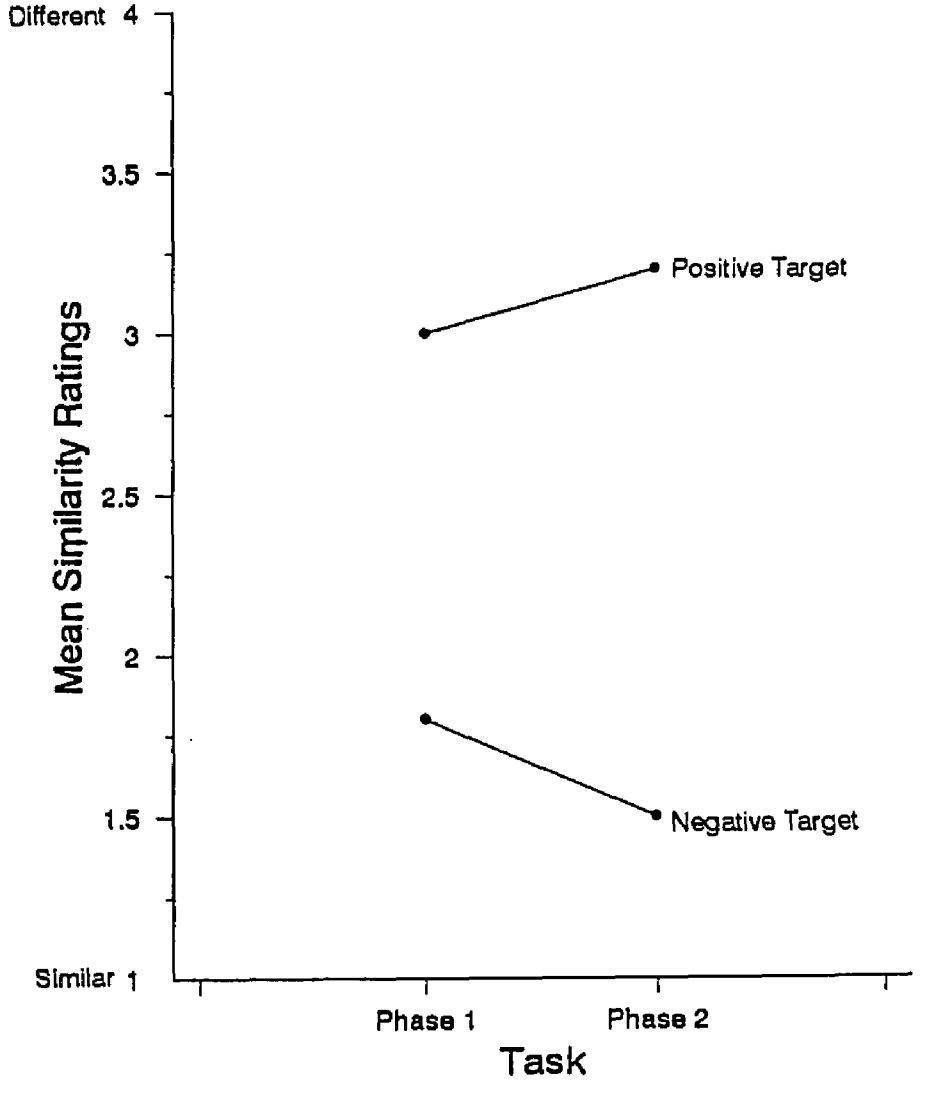

Figure 8

Mean Similarity Ratings from Phase 1 and Phase 2 for the Body Dysphoric Group-Negative Instructions

Table 12

Mean Similarity Ratings Across Phase 1 and Phase 2-Negative Instructions

	Task 1	Task 2
Eating Disorder		
Negative Target	1.8[a]	1.8[a]
Positive Target	3.2[a]	3.5[a]
Body Dysphoric		
Negative Target	1.8[a]	1.5[b]
Positive Target	3.0[a]	3.2[a]
Nonsymptomatic Control		
Negative Target	2.9[a]	3.0[a]
Positive Target	2.2[a]	2.6[b]

Note: Different superscripts indicate group means differ across phase 1 and phase 2.

Contrast analyses found that the body dysphoric group rated the negative targets as significantly more similar to the original ambiguous sentences following negative instructions, $F(1, 42) = 4.2$, $p < .05$. No significant differences were found in the ratings of the positive target sentences across tasks for the body dysphoric group, $F(1, 42) = 3.3$, $p < .07$. The eating disorder group did not rate the negative target, $F(1, 42) = .25$, $p < .6$, or positive target sentences, $F(1, 42) = 3.9$, $p < .054$, differently across tasks. Both the eating disorder, $F(1, 42) = 59.5$, $p < .0001$, and body dysphoric groups, $F(1, 42) = 56.3$, $p < .0001$, rated the negative target sentences as more similar than the positive target sentences following negative instructions. Results are presented in Table 12, and illustrated in Figures 7 and 8.

Ratings of Health Related Sentences in Phase 2

Two MANOVAS were performed on the health related sentences, one for each type of instructional condition (positive or negative). Similarity scores of the negative and positive health related target sentences from both versions of the task were used as dependent variables, and group membership was used as the independent variable. Results of the MANOVA examining the positive instructional condition found no group differences, $F(8, 78) = 1.19$, $p > .30$. The MANOVA investigating the negative

instructional condition showed no group differences, $F(8, 78) = 1.55$, $p > .15$.

Discussion

Using an ambiguous sentence task, this study investigated the presence of a judgment bias for emotional body related situations. Three groups of women were used as subjects in this experiment; eating disorder, body dysphoric, and nonsymptomatic control. In general, the eating disorder group reported more eating disorder symptomatology (EAT, BULIT, BSQ, DT, AN, and BN) and general psychopathology (BDI, State) than the body dysphoric or nonsymptomatic groups. Eating disorder and body dysphoric groups were equivalent on the following measures; body dissatisfaction (BD subscale of the EDI), current view of their body size and shape (CBS), and trait anxiety. The body dysphoric group scored higher and more similar to the eating disorder group on most measures of eating disorder symptomatology and general psychopathology than did the nonsymptomatic group. The body dysphoric and nonsymptomatic groups were equivalent on ideal body size (IBS), binge-eating (BE subscale of IDED), and bulimic symptoms (B subscale of EDI). The nonsymptomatic group had a lower body mass index (BMI) than the eating disorder or body dysphoric group. However, all 3 groups had BMI scores in the normal weight range, therefore this difference was determined to be clinically insignificant.

In phase 1 of this experiment, it was hypothesized that eating disorder and body dysphoric subjects would imagine more negative self referent scenes when instructed to imagine themselves in ambiguous body related situations than would the nonsymptomatic group. Results indicated that eating disorder and body dysphoric groups rated their imaginal interpretations of body related situations as more unpleasant than did the nonsymptomatic group. The ambiguous sentences were designed so that subjects would react with an automatic interpretation. It is likely that the ambiguous sentence task activated body related memories which are likely to be highly elaborated in eating disorder and body dysphoric individuals. These highly elaborated memories, and the associated negative emotion (predicted by Bower's spreading activation theory) bias the imaginal interpretations of these women. They are less likely to imagine themselves as thin, and more likely to imagine themselves as fat.

It was also predicted that the eating disorder and body dysphoric groups would recall their imagery of the body related ambiguous scenes with a negative "fear of fatness" interpretation, whereas the nonsymptomatic group was expected to recall their imaginal interpretations of body related situations with a more positive "thinness" interpretation. Results supported this hypothesis as the

eating disorder and body dysphoric groups rated the negative "fear of fatness" interpretations as more similar to their imagery of the body related sentences, and the nonsymptomatic group rated the thinness interpretations as more similar. These results indicate that the eating disorder and body dysphoric groups exhibited a negative judgment bias toward emotional body related situations. The nonsymptomatic group exhibited a positive bias which is typically found for information that is not of concern to the individual.

Smeets (95) suggested that because body shape and weight are the main criteria for inferring self worth for eating disorder individuals, as one is instructed to imagine themselves within a body related situation, negative thoughts and feelings associated with weight will be activated. In the ambiguous task, as soon as the eating disorder individual recognizes that she must imagine herself within one of her most feared situations (anything related to body shape or weight), she generates a "fatness" interpretation, and inhibits a "thinness" interpretation (Smeets, 95). Immediately, she will attend to her own body features, and the subsequent negative emotions that she has about them. These fatness interpretations are associated with a highly elaborate network of fat related memories, making it more unlikely that she will consider a thinness

interpretation. Smeets (1995) states that these memories (or schema) are likely to guide and influence interpretation of ambiguity when making a judgment. Consequently, when she is later asked to rate the similarity of negative and positive interpretations, she will view the negative interpretation as much more similar to her own imaginal interpretation. Arkes (1991) describes this phenomena as an associative judgment bias that occurs when irrelevant material (negative body memories) influences current judgments.

As predicted, this judgment bias was found only for emotional body related situations, not for emotional health related situations. This finding is in support of the content specificity hypothesis (Dagleish, & Watts, 1990) which states that cognitive biases should be generally specific to the unique content of the symptoms of a specific psychological disorder. Specifically, an overconcern or preoccupation with body size and weight, such as that shown by persons diagnosed with an eating disorder or those high in body dysphoria, should result in an information processing bias toward body size and weight related stimuli. These data suggest that the emotionality of stimuli may play a mediating role in judgment biases for stimuli related to a person's pathological concerns (i.e., body related stimuli for eating disorders).

A response bias was exhibited by both the eating disorder and body dysphoric groups as both groups rated the negative control sentences (sentences constructed to be different from the ambiguous sentences) as more similar to their imaginal interpretations of the ambiguous body related situations than the positive control sentences. It is interesting to note that the eating disorder group rated the negative control as more similar than the positive target indicating that they perceived a negative body related sentence that was not presented via audio tape as more similar than a positive version of a body related sentence which was presented. These results suggest that subjects in the eating disorder group perceived all negative body related scenarios as more likely than positive body related scenarios. The body dysphoric group rated the negative control as equivalent in similarity to the positive target sentences suggesting that they perceived the positive sentences that were similar to the ambiguous body related sentences that were presented as dissimilar as the control sentences (non-presented sentences). These results indicate that the eating disorder and body dysphoric groups had difficulty imaging themselves in any type of positive or thinness interpretation of a body related situation. Although a negative response bias was found for these groups, they rated the negative target sentences as more

similar to their imaginal interpretations of the ambiguous body related sentences than the negative control sentences. This indicates that they were able to distinguish negative sentences that were very similar to the ambiguous body related sentences from negative sentences which were not presented. Overall, these groups exhibited a judgment bias favoring a negative or fatness interpretation of body related situations.

No group differences were found between the eating disorder and body dysphoric groups on either portion of the ambiguous sentence task. This finding suggests that the judgment bias found in this study was associated with an overconcern and preoccupation with body size and weight found in both eating disorder and body dysphoric individuals, and not due to some characteristic specific to clinical eating disorders.

In phase 2 of this experiment, subjects were instructed to imagine themselves in a second set of ambiguous body related situations. They were instructed to imagine themselves with either a positive or negative interpretation of the ambiguous situations. Results examining the positive instructional condition found that the eating disorder and body dysphoric groups rated their imagery of the body related situations as more pleasant as compared to their imagery on phase 1 (non-instructional condition). The

eating disorder group and body dysphoric groups rated their imagery of the body related sentences as more unpleasant than did the nonsymptomatic group. These results indicate that both groups were able to imagine themselves more positively on body related situations when given positive instructions.

The test examining the negative instructions found that all three groups rated body and health related ambiguous sentences as more unpleasant as compared to phase 1 results, with the exception of the health related sentences for the nonsymptomatic group. These results suggest that the groups were able to imagine themselves more negatively when given negative instructions with the exception of the health related sentences for the nonsymptomatic group.

As predicted during the positive instructional condition, the eating disorder and body dysphoric groups rated the negative interpretations of their imagery of the ambiguous body related situations as more similar than the nonsymptomatic group did. This result indicates that the eating disorder and body dysphoric groups had more difficulty imagining themselves positively as compared to the nonsymptomatic group. However, both the eating disorder and body dysphoric groups were able to change their interpretations of these ambiguous body related situations as they were able to perceive the negative target sentences

as less similar in phase 2 (positive instructions) as compared to phase 1. The body dysphoric group also rated the positive target sentences as more similar to their imagery in phase 2 than in phase 1. The positive instructions had the effect of neutralizing the negative judgment bias of the body dysphoric group for they rated the positive and negative interpretations equivalently in phase 2.

Although the eating disorder group rated the negative interpretations less similarly on phase 2, they were not able to modify their ratings of the positive interpretations from phase 1 to phase 2. Consequently, the eating disorder group continued to rate the negative interpretations as more similar than the positive interpretations in phase 2. This indicates that they were able to modify their imagery and recall of their imagery somewhat, by making it less negative. However, they had difficulty imagining themselves in a positive fashion. These results suggest that eating disorder subjects may have had more difficulty engaging in positive imagery of body related material even when instructed to imagine themselves in a positive fashion.

When instructed to imagine themselves in a negative fashion, the eating disorder and body dysphoric groups rated the negative interpretations targets as more similar to their imagery of the ambiguous body related situations,

whereas, the nonsymptomatic group rated the positive interpretations as more similar. These results indicate that the nonsymptomatic group had more difficulty imaging themselves in a negative fashion as compared to the eating disorder and body dysphoric groups. The nonsymptomatic group rated the positive interpretations as less similar to their imagery of the body related situations in phase 2 as compared to phase 1. However, they were unable to rate the negative interpretations as more similar even when given instructions to imagine themselves negatively. The negative instructions had the effect of neutralizing their positive bias toward body related situations for they rated the positive and negative interpretations equivalently on phase 2.

This experiment was one of the first to experimentally test the notion that cognitive restructuring operates by changing the way information is processed. During the positive instructional phase, results support cognitive techniques currently being used in the treatment of eating disorder individuals (Fairburn, et al., 1991). Although the negative judgment bias was not neutralized, they were able to perceive themselves less negatively. This modification of body related imagery and subsequent cognitions was found during one administration of positive instructions. Positive instructions are similar to the instructions

therapists give their clients when asking them to modify their cognitions with the goal of restructuring automatic eating and body related cognitions in a more realistic and less negative fashion. Cognitive restructuring of eating and body related cognitions generally takes place over a number of months, therefore one would expect more dramatic changes in cognitions. More dramatic changes were found for the nonclinical groups. Positive instructions neutralized the negative judgment bias exhibited by the body dysphoric group, and negative instructions neutralized the positive bias exhibited by the nonsymptomatic group.

In summary, it appears that extreme body dysphoria is associated with a judgment bias for emotional body related situations. The present study found that eating disorder and body dysphoric individuals imagined and recalled more negative self-referent body related scenarios as compared to a group of nonsymptomatic individuals. The eating disorder and body dysphoric groups recalled their imaginal interpretations of ambiguous body related situations with a negative "fatness" interpretation. Whereas the nonsymptomatic group recalled their imagery of the same ambiguous body related situations with a positive "thinness" interpretation. These data support the content specificity hypothesis, for negative judgment bias was found only for

body related situations, and not for health related situations.

It is likely that the ambiguous sentence task activated body related memories which are highly elaborated in eating disorder and body dysphoric individuals. The memories associated with the body schema bias the individual's judgment of ambiguity in a manner that is congruent with negative memories and emotions. Consequently, this judgment bias may have caused eating disorder and body dysphoric subjects to easily imagine themselves as fat, but may have inhibited imagery of themselves as thin (Williamson, in press). In fact, when given positive instructions, eating disorder individuals had difficulty imagining themselves in positive body related situations. We suspect that these results suggest that eating disorder and body dysphoric subjects formed an automatic fatness interpretation that was outside of their awareness, however, this hypothesis requires further investigation.

The second portion of this study investigated the effects of positive and negative instructions on this automatic judgment bias. Results indicated that eating disorder individuals had difficulty imaging themselves in a positive fashion. This finding supports the concept of a negative body schema that guides (biases) information processing of concern related stimuli. Eating disorder

individuals were able to imagine themselves less negatively, so the positive instructions did have an effect on their imagery. Data indicated that the positive instructions had the effect of neutralizing the negative judgment bias previously found in the body dysphoric group. These results suggest that the severity of eating disorder symptoms had an effect on the ability to alter one's imagery and cognitions. Overall, this study found support for cognitive restructuring of automatic body related cognitions. It does appear that cognitive techniques change information processing of concern related information.

To date, it has been shown that persons diagnosed with an eating disorder and those high in body dysphoria selectively process body related stimuli (Schotte, et al., 1990; Fuller, et al., 1995), exhibit a negative memory bias for body related stimuli (Baker, et al., 1993; Sebastian, et al., in press), and exhibit a negative judgment bias for body related stimuli (Jackman, et al., in press). It is probable that the above cognitive biases serve to maintain or worsen symptomatology in eating disorder patients. The presence of a memory bias suggests that emotional body related memories are highly elaborated, and hence more retrievable. The automatic encoding and elaboration of body related material strengthens the body related schema, thereby making body related material more accessible, and

judgment errors more likely. The end result of this encoding and retrieval cycle is the worsening of eating disorder symptomatology.

This study found support for cognitive modification strategies in decreasing judgment biases. It is likely that cognitive modification strategies modify both automatic processes and elaborative processes. It is suggested that future research examine the effects of cognitive modification strategies on attentional and memory biases in eating disorder and body dysphoric individuals.

References

Alba, J. W., & Hasher, L. (1983). Is memory schematic? Psychological Bulletin, 93, 203-231.

Arkes, H. R. (1991). Costs and benefits of judgment errors: Implications for debiasing. Psychological Bulletin, 110, 486-498.

Baker, J. D., Williamson, D. A., & Sylve, C. M. (1993, November). Memory bias and mood induction in normal-weight body-dysphoric women. Paper presented at the annual meeting of the Association for the Advancement of Behavior Therapy, Atlanta, Georgia.

Beck, A. T. (1976). Cognitive Therapy and the Emotional Disorders. New York: International Universities Press.

Beck, A. T., & Emery, G., Greenberg, R. C. (198/5). Anxiety Disorders and Phobias: A cognitive perspective. New York: Basic Books.

Beck, A. I., Ward, C. H., Mendelson, M., Mock, J. E., & Erbaugh, J. K. (1961). An inventory for measuring depression. Archives of General Psychiatry, 4, 561-571.

Ben-Tovim, D. I., Walker, M. K., Fok, D., & Yap, E. (1989). An adaptation of the Stroop test for measuring shape and food concerns in eating disorders: A quantitative measure of psychopathology? International Journal of Eating Disorders, 8, 681-687.

Bower, G. H. (1981). Mood and memory. American Psychologist, 36, 129-148.

Bower, G. H. (1987). Commentary on mood and memory. Behavior Research and Therapy, 25, 443-455.

Channon, S., Hemsley, D., & de Silva, P. (1988). Selected processing of food words in anorexia nervosa. British Journal of Clinical Psychology, 27, 259-260.

Clark, D. M. (1988). A cognitive model of panic attacks. In S. Rachman, & J. D. Maser (Eds.), Handbook of Anxiety Disorders. Hillsdale, NJ: Erlbaum.

Cooper, P. J., Anastasiades, P., & Fairburn, C. G. (1992). Selective processing of eating, shape, and weight related words in persons with bulimia nervosa. Journal of Abnormal Psychology, 101, 352-355.

Cooper, P. J., Taylor, M. J., Cooper, Z., & Fairburn, C. G. (1987). Development and validation of the Body Shape Questionnaire. International Journal of Eating Disorders, 6, 485-494.

Dagleish, T. & Watts, F. N. (1990). Biases of attention and memory in disorders of anxiety and depression. Clinical Psychology Review, 10, 589-604.

Eysenck, H. J., MacLeod, C. & Mathews, A. (1987). Cognitive functioning in anxiety. Psychological Research, 49, 189-195.

Eysenck, M. W., & Mogg, K. (1992). Clinical anxiety, trait anxiety, and memory bias. In S. Christianson (Ed.), The Handbook of Emotion and Memory: Research and Theory. Hillsdale NJ: Lawrence Erlbaum Associated.

Eysenck, M. W., Mogg, K., May, J., Richards, A., & Mathews, A. (1991). Bias in interpretation of ambiguous sentences related to threat in anxiety. Journal of Abnormal Psychology, 100, 144-150.

Fairburn, C. G., Cooper, P. J., Cooper, M. J., McKenna, F. P., & Anastasiades, P. (1991). International Journal of Eating Disorders, 10, 415-422.

Fairburn, D. G., Jones, R., Peveler, R. C., Carr, S. J., Solomon, R. A., O'Connor, M. E., Burton, J., & Hope, R. A. (1991). Archives of General Psychiatry, 48, 463-469.

Foa, E. B., & McNally, R. J. (1987). Cognition and agoraphobia: Bias in the interpretation of threat. Cognitive Therapy and Research, 11, 567-581.

Garner, D. M. (1991). Eating Disorder Inventory-2 Manual. Odessa Fl: Psychological Assessment Resources, Inc.

Garner, D. M., & Bemis, K. M. (1982). A cognitive-behavioral approach to anorexia nervosa. Cognitive Therapy and Research, 6, 123-150.

Garner, D. M., & Garfinkel, P. E. (1979). The eating attitudes test: An index of the symptoms of anorexia nervosa. Psychological medicine, 9, 273-279.

Gotlib, I. H. & McCann, C. D. (1984). Construct accessibility and depression: An examination of cognitive and affective factors. Journal of Personality and Social Psychology, 47, 427-439.

Haaga, D. A. F., Dyck, M. J., & Ernst, D. (1991). Empirical status of cognitive theory of depression. Psychological Bulletin, 110, 215-236.

Hadigan, C. M., & Walsh, B. T. (1991). Body shape concerns in bulimia nervosa. International Journal of Eating Disorders, 10, 323-331.

Jackman, L. J., Williamson, D. A., Netemeyer, R. G., & Anderson, D. A. (in press). Do weight preoccupied women misinterpret ambiguous stimuli related to body size? Cognitive Therapy and Research.

Long, C. G., Hinton, C., & Gillespie, N. K. (1994). Selective processing of food and body size words: Application of the Stroop test with obese restrained eaters, anorexics, and normals. International Journal of Eating Disorders, 15, 279-283.

Mathews, A. (1990). Why worry? The cognitive function of anxiety. Behavior Research Therapy, 28, 455-468.

Mathews, A., & MacLeod, C. (1985). Selective processing of cues in anxiety states. Behavior Research & Therapy, 23, 563-569.

Mathews, A., Richards, A., & Eysenck, M. W. (1989). The interpretation of homophones related to threat in anxiety states. Journal of Abnormal Psychology, 98, 31-34.

Perpina, C., Hemsley, D., Treasure, J., & de Silva, P. (1993). Is the selective information processing of food and body words specific to patients with eating disorders? International Journal of Eating Disorders, 14, 359-366.

Pollack, B. (1942). The validity of the Shipley-Hartford Retreat Test for Deterioration. Psychiatric Quarterly, 16, 119-131.

Schmidt, N. B., & Telch, M. J. (1991). Selective processing of body shape and food cues in high and low restraint subjects. Paper presented at the annual meeting of the Association for the Advancement of Behavior Therapy, New York.

Schotte, D. E., McNally, R. J., & Turner, M. L. (1990). A dichotic listening analysis of body weight concerns in bulimia nervosa. International Journal of Eating Disorders, 9, 109-113.

Sebastian, S. B., & Williamson (1993, November). Explicit memory bias for body-related stimuli in the eating disorders. Poster presented at the annual meeting for the Association for the Advancement of Behavior Therapy, Atlanta, Georgia.

Schlundt, D. G., & Johnson, W. G. (1990). Eating Disorders: Assessment and Treatment. Boston: Allyn and Bacon.

Smeets, M. (1995). Body Size Estimation Research in Anorexia Nervosa: Breaking the Deadlock. Unpublished doctoral dissertation, University of Utrecht, Utrecht, Netherlands.

Smith, M. C., & Thelen, M. H. (1984). Development and validation of a test for bulimia. Journal of Consulting and Clinical Psychology, 52, 863-872.

Spielberger, C. D., Gorsuch, R. L., & Lushene, R. E. (1970). Manual for the State Trait Anxiety Inventory. Palo Alto, CA: consulting Psychologists Press.

Stoler, L. S., & McNally, R. J. (1991). Cognitive bias in symptomatic and recovered agoraphobics. Behavior Research and Therapy.

Stroop, J. R. (1935). Studies of interference in serial verbal reactions. Journal of Experimental Psychology, 18, 643-661.

Vitousek, K. B., & Hollon, S. D. (1990). The investigation of schematic content and processing in eating disorders. Cognitive Therapy and Research, 14, 191-124.

Watts, F. N., McKenna, F. P., Sharrock, R. & Trezise, L. (1986). Color naming of phobia related words. British Journal of Psychology, 77, 97-108.

Williams, J. M. G., Watts, F. N., MacLeod, C., & Mathews, A., (1988). Cognitive Psychology and Emotional Disorders. New York: John Wiley & Sons.

Williamson, D. A. (in press). Body image disturbances in eating disorders: A form of cognitive bias? Eating Disorders: The Journal of Treatment and Prevention.

Williamson, D. A., Barker, S.E., & Norris, L. E. (1993). Etiology and management of eating disorders. In P. B. Sutker & H. E. Adams (Eds.), Comprehensive Handbook of Psychopathology (2nd Ed.).

Williamson, D. A., Cubic, B. A., & Gleaves, D. H. (1993). Equivalence of body image disturbance in anorexia and bulimia nervosa. Journal of Abnormal Psychology, 102, 000-000.

Williamson, D. A., Davis, C. J., Goreczny, A. J., Bennett, S. M., & Gleaves, D. H. (1989). Development of a simple procedure for assessing body image. Behavioral Assessment, 11, 443-446.

Williamson, D. A., Gleaves, D. H., & Lawson, O. J. (1991). Biased perception of overeating in bulimia nervosa and compulsive binge eaters. Journal of Psychopathology and Behavioral Assessment, 13, 257-268.

Williamson, D. A., Sebastian, S. B., & Varnado, P. J. (1993). Anorexia and bulimia nervosa. In A. J. Goreczny (Ed.), Handbook of Health and Rehabilitation Psychology. New York: Plemum Press.

Appendix A

Recorded Sentences-Phase 1

Recorded Sentences 1

Practice Sentences:

A. You decide not to bother buying wine for tonight's picnic when you see the dark, cloudy sky.

B. While opening your mail you discover that the important letter was on the table.

C. After receiving a skirt as a gift, you try it on and you notice how it fits your figure.

Ambiguous Sentences and Nonambiguous Filler Sentences:

1. After arriving at a friend's birthday party, a friend comments about how your dress fits your figure.

2. As you open the window to let fresh air in, you notice the dark storm clouds that are approaching.

3. Watching a sad film in a crowded theater, you feel your breath catch in your throat.

4. As you reach for change, you realize that you have a hole in your pocket.

5. After eating a candy bar, you weigh yourself and the scale shows what you expected.

6. As you lift a heavy box, you notice a pain in your chest and arm.

7. After receiving a sweater as a gift, you realize that it really looks good on you.

8. After exercising for two hours at the health club, you get a glimpse of the shape of your hips as you pass by the mirror.

9. You check your bank balance and realize that you had more money than you thought.

10. While at home for Christmas vacation, your dad comments about your weight.

11. While eating your picnic lunch, you notice that the flowers are beginning to bloom.

12. After going out to dinner the night before, you wake up with an unusual pain in your stomach.

13. While shopping at Cortana Mall, you realize that people are staring at you as you walk by in your new mini-skirt.

14. At a friend's house you stand up when being offered another drink and are aware of feeling lightheaded and dizzy.

15. When you awoke in the middle of the night, you noticed that you had broken out in a cold sweat, your heart was racing and your head was pounding.

16. After watching a Ms. America Pageant, you begin to think about how you would look in a bikini.

17. After climbing the stairs in a hurry, you feel your heart pounding.

18. While sunbathing on a beach, you compare your body shape to the figures of the other women on the beach.

19. Even though you had planned on spending a quiet evening at home, your friends convince you to come to their party.

20. Concerned about a small lump on your neck, you are examined by your doctor, who then tells you to relax while giving you the results.

21. After eating a Big Mac, large fry and large Coke, you notice your stomach.

22. While on vacation at a remote cottage, you return from a day of walking in the hills with pains in your side.

23. Before going to a cook out, you stop at a convenience store to pick up some bug spray.

24. Recurrent headaches have caused you to visit your doctor, who then tells you what you expected.

25. You think that the new poster you bought looks great on the closet door.

26. While trying on clothes at Dillards, you realize that your regular size no longer fits.

27. After cleaning your room, you decide to go for a walk.

28. At the cancer screening clinic, you see the doctor coming towards you with your chest X-rays.

29. While playing frisbee at the park, you notice that your shoe is untied.

30. While dancing with your date, you feel him put his arm around your waist.

Appendix B

Ambiguous Sentences and Disambiguated Versions-Phase 1

Ambiguous Sentences and Disambiguated Sentences (Part 1)

Weight Related Sentences

After exercising for two hours at the health club, you get a glimpse of the shape of your hips as you pass by the mirror.
- After exercising for two hours at a health club, you get a glimpse of your large hips as you pass by the mirror.
- After exercising for two hours at the health club, you get a glimpse of your toned hips as you pass by the mirror.
- After swimming laps, you realize that you will never lose the weight you gained.
- After swimming laps, you realize that you are beginning to lose weight.

After arriving at a friend's birthday party, a friend comments about how your dress fits your figure.
- After arriving at a friend's birthday party, a friend comments about how the dress makes you look heavier.
- After arriving at a friend's birthday party, a friend comments about how the dress makes you look thinner.
- After the basketball game, a friend tells you that you should go on a diet.
- After the basketball game, a friend tells you that you need to gain weight.

After eating a candy bar, you weigh yourself, and the scale shows what you expected.
- After eating a candy bar, you weigh yourself, and tha scale shows that you have not gained any weight.
- After eating a candy bar, you weigh yourself, and the scale shows that you have gained weight.
- You skipped dinner, because you notice that your stomach is protruding.
- You ate a big dinner, because you had not eaten all day.

While at home for Christmas vacation, your dad comments about your weight.
- While at home for Christmas vacation, your dad comments about your weight gain.
- While at home for Christmas vacation, your dad comments about your weight loss.
- After partying all day during Mardi-Gras, you felt like you had gained five pounds.
- After partying all day during Mardi-Gras, you felt great.

While shopping at Cortana Mall, you realize that people are staring at you as you walk by in your new mini-skirt.

While shopping at Cortana Mall, you realize that people are staring at your fatness as you walk by in your new mini-skirt.

While shopping at Cortana Mall, you realize that people are staring at your trim figure as you walk by in your new mini-skirt.

While walking around the lakes, you notice that your thighs are jiggling.

While walking around the lakes, you notice that your thighs are in better shape.

After watching a Ms. America Pageant, you begin to think about how you would look in a bikini.

After watching a Ms. America Pageant, you begin to think about how your stomach would look too fat for a bikini.

After watching a Ms. America Pageant, you begin to think about how great you would look in a bikini.

After going to the opera, you realize that you will always be heavy just like the opera star.

After going to the opera, you realize that you will always be thinner than the opera star.

While sunbathing on a beach, you compare your body shape to the figures of the other women on the beach.

While sunbathing on a beach, you realize that your body shape is flabby when compared to the figures of the other women on the beach.

While sunbathing on a beach, you realize that your body shape is thin when compared to the figures of the other women on the beach.

While doing aerobics, you notice that you are getting out of shape.

While doing aerobics, you notice that you are starting to get thinner.

After eating a Big Mac, large fry and large coke, you notice your stomach.

After eating a Big Mac, large fry and large Coke, you notice that your stomach felt fatter.

After eating a Big Mac, large fry and large Coke, you notice that your stomach was flat.

After entering your favorite restaurant, you begin to think that everything you eat goes right to your waist.

After entering your favorite restaurant, you begin to think that your diet is working.

While trying on clothes at Dillards, you realize that your regular size no longer fits.

While trying on clothes at Dillards, you realize that you need a larger size.

While trying on clothes at Dillards, you realize that you need a smaller size.
While watching television, you realize that you had snacked so much that you had overeaten.
While watching television, you realize that you had forgotten dinner.

While dancing with your date, you feel his arm encircling your waist.
While dancing with your date, you feel self conscious about your waist being too large.
While dancing with your date, you feel proud about the thinness of your waist.
After fasting all day, you realize that you are still five pounds overweight.
After fasting all day, you realize that you lost two pounds.

Health Related Sentences

Watching a sad film in a crowded theatre, you feel your breath catch in your throat.
Watching a sad film in a crowded theatre, you feel that you are suffocating.
Watching a sad film in a crowded theatre, you feel very moved by the story.
One day while standing in line at the grocery store, you feel as if you are hyperventilating.
One day while standing in line at the grocery store, you relax when you realize that you are next in line.

As you lift a heavy box, you notice a pain in your chest and arm.
As you lift a heavy box, you notice a pain in your chest and arm and you realize that it is too heavy for you.
As you lift a heavy box, you notice a pain in your chest and arm and you realize that your heart may give out on you.
While painting your room, you feel a pain in your back and realize that you'll be sore tomorrow.
While painting your room, you feel a pain in your back and realize that you have damaged your back.

At a friend's house you stand up when being offered another drink and are aware of feeling lightheaded and dizzy.
At a friend's house you stand up when being offered another drink and you are aware of feeling like you are going to collapse.
At a friend's house you stand up when being offered another drink and you are aware of feeling slightly tipsy.
While driving home late one evening, your vision gets blurry and you feel that you are going to pass out.

While driving home late one evening, you rub your eyes and you can see normally again.

Concerned about a small lump on your neck, you are examined by your doctor, who then tells you to relax while giving you the results.

Concerned about a small lump on your neck, you are examined by your doctor, who then tells you to relax while learning the bad news.

Concerned about a small lump on your neck, you are examined by your doctor, who then tells you that there is nothing to worry about.

Concerned about a lesion on your leg, you are examined by your doctor who tells you that you need an operation.

Concerned about a lesion on your leg, you are examined by your doctor who tells you that it is healing nicely.

After climbing the stairs in a hurry, you feel your heart pounding.

After climbing the stairs in a hurry, you feel as if you are about to have a heart attack.

After climbing the stairs in a hurry, you notice that you're out of breath.

As you climb up the stairs in a hurry, you slip and fall down the entire flight of stairs.

As you climb up the stairs in a hurry, you stub your toe on the stairs.

While on vacation at a remote cottage, you return from a day of walking in the hills with pains in your side.

While on vacation at a remote cottage, you return from a day of walking in the hills with signs of a serious illness.

While on vacation at a remote cottage, you return from a day of walking in the hills with a cramp.

While on vacation at a remote cottage with no transportation you run out of food and are afraid of starvation.

While on vacation at a remote cottage, you realize that you are low on food and have to wait for the ranger to return at the end of the day.

Recurrent headaches have caused you to visit your doctor, who then tells you what you expected.

Recurrent headaches have caused you to visit your doctor who tells you that your headaches are a sign that you are losing your eye sight.

Recurrent headaches have caused you to visit your doctor who tells you that your headaches are due to eye strain.

Recurrent stomach aches have caused you to visit your doctor who tells you that you have a bleeding ulcer.

Recurrent stomach aches have caused you to visit your doctor who tells you that you need to drink more water.

At the cancer screening clinic, you see the doctor coming towards you with your chest X-rays.

At the cancer screening clinic, you see the doctor coming towards you with an X-ray of your tumor.

At the cancer screening clinic, you see the doctor coming towards you with your X-ray and he tells you that you are fine.

At the dentist's office, the dentist uses your X-rays to show you that your wisdom teeth need to be removed.

At the dentist's office, the dentist uses your X-rays to show you that you don't have any cavities.

When you awoke in the middle of the night, you noticed that you had broken out in a cold sweat, your heart was racing and your head was pounding.

After awakening in the middle of the night in a cold sweat with your heart racing and your head pounding, you realize that you might be dying.

After awakening in the middle of the night in a cold sweat with your heart racing and your head pounding, you realize that you just had another bad dream.

After jogging for a few minutes you notice that you are having trouble breathing, and you think that you might have an asthma attack.

After jogging for a few minutes you notice that you are having trouble breathing and you decide to rest.

After going out to dinner the night before, you wake up with an unusual pain in your stomach.

After going out to dinner the night before, you wake up the next morning with food poisoning.

After going out to dinner the night before, you wake up the next morning with mild indigestion.

After going out to dinner, you cross the street and look up to see an oncoming car about to hit you.

After going out to dinner, your ride leaves and you have to catch a taxi.

Appendix C

Memory Task-Phase 1

Part B1

Your job is to rate the similarity of <u>each sentence</u> to one of the scenes that you <u>IMAGINED</u> while listening to the tape. Some of these sentences will be very similar to what you imagined while listening to the tape, some will be different, and some you have not heard. Please use the following rating scale in making your judgements. Record your answers on the attached rating sheet.

1. **Very Similar**
2. **Fairly Similar**
3. **Fairly Different**
4. **Very Different**

Practice:

A. While opening your mail you discover that the important letter was on the table.

B. One morning, after breakfast you fell asleep on the couch and missed your appointment.

C. After receiving a skirt as a gift, you notice the large stain on the front of it.

<u>Rate the similarity of each of the following sentences to the situations that you imagined while listening to the tape</u>.

1. After exercising for 2 hours at a health club, you get a glimpse of your large hips as you pass by the mirror.

2. As you lift a heavy box, you notice a pain in your chest and arm and you realize that it is too heavy for you.

3. While at home for Christmas vacation, your dad comments about your weight loss.

4. While on vacation at a remote cottage, you realize that you are low on food and have to wait for the ranger to return at the end of the day.

5. After going out to dinner the night before, you wake up the next morning with food poisoning.

6. After eating a candy bar, you weigh yourself, and the scale shows that you have not gained any weight.

7. Recurrent stomach aches have caused you to visit your doctor who tells you that you have a bleeding ulcer.

8. After arriving at a friend's birthday party, a friend comments about how the dress makes you look thinner.

9. While shopping at Cortana Mall, you realize that people are staring at your fatness as you walk by in your new mini-skirt.

10. After climbing the stairs in a hurry, you feel as if you are about to have a heart attack.

11. You are eating a big dinner, because you had not eaten all day.

12. After awakening in the middle of the night in a cold sweat with your heart racing and your head pounding, you realize that you may be dying.

13. While sunbathing on a beach, you realize that your body shape is too heavy when compared to the figures of the other women on the beach.

14. While watching television, you realize that you are hungry because you had forgotten dinner.

15. At the cancer screening clinic, you see the doctor coming towards you with an X-ray of your tumor.

16. While dancing with your date, you feel proud about the thinness of your waist.

17. While trying on clothes at Dillards, you realize that you need a smaller size.

18. After jogging for a few minutes you notice that you are having trouble catching your breath and you decide to rest.

19. While driving home late one evening, your vision gets blurry and you feel that you are going to pass out.

20. After the basketball game, a friend tells you that you should go on a diet and lose weight.

21. After partying all day during Mardi-Gras, you noticed that you looked great.

22. After fasting all day, you realize that you had lost at least two pounds.

23. At a friend's house you stand up when being offered another drink, and you are aware of feeling like you are going to collapse.

24. After watching a Ms. America Pageant, you begin to think about how your stomach is too fat for a bikini.

25. At the dentist's office, the dentist uses your X-rays to show you that you don't have any cavities.

26. After going out to dinner, you cross the street and look up to see an oncoming car about to hit you.

27. Watching a sad film in a crowded theater, you feel very moved by the story.

28. One day while standing in line at a grocery store, you relax when you realize that you are next in line.

29. One evening, after going to the opera, you realize that you will always be thinner than the opera star.

30. While on vacation at a remote cottage, you return from a day of walking in the hills with signs of a serious illness.

31. One afternoon, while walking around the lakes, you began to feel uncomfortable because you could tell that your thighs were jiggling.

32. Concerned about a small lump on your neck, you are examined by your doctor, who then tells you to relax while learning the bad news.

33. After jogging for a few minutes you notice that you are having trouble catching your breath, and you think that you might have an asthma attack.

34. After swimming laps, you looked down at your figure and you realize that you will never lose the weight you had gained.

35. Recurrent headaches have caused you to visit your doctor who tells you that your headaches are a sign that you are losing your eye sight.

36. After eating a Big Mac, large fry and large Coke, you notice that your stomach felt fatter.

37. At a friend's house you stand up when being offered another drink, and you are aware of feeling slightly tipsy.

38. As you climb up the stairs in a hurry, you stub your toe on the stairs.

39. After doing aerobics for six weeks, you notice that your figure is beginning to look as good as the other women in your class.

40. While dancing with your date, you feel self conscious about your waist being too large.

41. After going out to dinner, your ride leaves and you have to call and ask a friend for a ride home.

42. After eating a candy bar, you weigh yourself, and the scale shows that you have gained weight.

43. Concerned about a lesion on your leg, you are examined by your doctor who tells you that it is healing nicely.

44. After exercising for 2 hours at the health club, you get a glimpse of your firm hips as you pass by the mirror.

45. At the cancer screening clinic, you see the doctor coming towards you with your X-ray and he tells you that you are fine.

46. While on vacation at a remote cottage, you return from a day of walking in the hills with a cramp.

47. While trying on clothes at Dillards, you realize that you need a larger size.

48. Recurrent stomachaches have caused you to visit your doctor who tells you that you need to drink more water.

49. You skipped dinner, because you notice that your stomach was protruding.

50. After awakening in the middle of the night in a cold sweat with your heart racing and your head pounding, you realize that you just had another bad dream.

51. After entering your favorite restaurant, you begin to think that everything you eat goes right to your waist.

52. While painting your room, you feel a pain in your back and realize that you'll be sore tomorrow.

53. Watching a sad film in a crowded theater, you feel that you are suffocating.

54. After the basketball game, a friend tells you that you need to gain weight because you are too thin.

55. After climbing the stairs in a hurry, you notice that you're out of breath.

56. Concerned about a small lump on your neck, you are examined by your doctor, who then tells you that there is nothing to worry about.

57. While at home for Christmas vacation, your dad comments about your weight gain.

58. At the dentist's office, the dentist uses your X-rays to show you that all four of your wisdom teeth need to be removed.

59. Recurrent headaches have caused you to visit your doctor who tells you that your headaches are due to eye strain.

60. After partying all day during Mardi-Gras, you felt like you had gained five pounds.

61. One day while standing in line at a grocery store, you feel as if you are hyperventilating.

62. After watching a Ms. America Pageant, you begin to think about how great you look in a bikini.

63. While driving home late one evening, your vision gets blurry but you rub your eyes and you can see normally again.

64. After swimming laps, you looked down at your figure and you realize that you are beginning to lose the weight that you had gained.

65. While shopping at Cortana Mall, you realize that people are staring at your trim figure as you walk by in your new mini-skirt.

66. While watching television, you realize that you had snacked so much that you had overeaten.

67. While on vacation at a remote cottage with no transportation, you run out of food and are afraid that you might starve.

68. One evening, after going to the opera, you realize that you will always be heavy just like the opera star.

69. After arriving at a friend's birthday party, a friend comments about how the dress makes you look heavier.

70. After going out to dinner the night before, you wake up the next morning with mild indigestion.

71. After doing aerobics for six weeks, you notice that you are still out of shape when compared to the other women in your class.

72. As you lift a heavy box, you notice a pain in your chest and arm and you realize that your heart may give out on you.

73. After fasting all day, you realize that you are still five pounds overweight.

74. While painting your room, you feel a pain in your back and realize that you have damaged your back.

75. After eating a Big Mac, large fry and large Coke, you notice that your stomach is flat.

76. Concerned about a lesion on your leg, you are examined by your doctor who tells you that you need an operation.

77. While sunbathing on a beach, you realize that your body shape is thin when compared to the figures of the other women on the beach.

78. After entering your favorite restaurant, you begin to think that your diet is working.

79. As you climb up the stairs in a hurry, you slip and fall down the entire flight of stairs.

80. One evening, while walking around the lakes, you began to feel better about your figure because you could tell that your thighs were in better shape.

Appendix D

Recorded Sentences-Phase 2

Recorded Sentences 2

Practice Sentences:

A. Although you would like to fly home for Christmas, you plan to drive because it is so much cheaper.

B. After watching the baseball game, you read a book.

C. You and your friends decide to take golf lessons.

Ambiguous and Nonambiguous filler sentences:

1. As you walk into your dark apartment and put down your books, all of your friends jump up from behind the couch yelling "Surprise".

2. As you approach the party you can hear music and noisy conversation, but as you walk through the door, everyone stops talking and stares.

3. After eating dinner at a buffet, you realize the quantity of food you have eaten.

4. Out shopping one day, you see a friend across the road, but when you call to them they walk straight past.

5. Your favorite record store is having a sale, so you go there to buy some new CDs.

6. One morning while trying on your favorite jeans, you realize that your jeans don't fit properly.

7. After applying for a job that you really want, you receive a letter from them which contains the answer you had expected.

8. You and your roommate move into an old house with a large yard, so you decide to get a dog.

9. After the doctor weighs you, he looks at you very closely.

10. As you drive down the interstate, you notice the man in the car next to you.

11. There aren't any good movies showing in town, so you and your friends decide to rent some videos.

12. Having arranged to meet a friend at a bar, you arrive to find that they are not there.

13. After playing three sets of tennis at the club, you jump in the hot tub.

14. While looking at a picture of a model in a magazine, you think about how you would look in her outfit.

15. It is your birthday, but no cards have arrived when you leave for work.

16. You don't have any more clean clothes so you know it's time to go to the laundromat.

17. As you sit on the couch, you notice your thighs.

18. After reading the paper, you decide to take a nap.

19. When you show people the thing that you have made, everyone comments on your handiwork.

20. While reading one afternoon, you think about your weight.

21. While playing cards, you notice that it is raining.

22. While wearing a sleeveless shirt you notice your upper arms.

23. As you stop to buy a newspaper, you hear rapid footsteps behind you.

24. After rearranging your furniture, you realize that your house looks good.

25. During a social function, you notice a group of people looking at you.

26. As you open the parcel with a knife, you slip and cut deeply.

27. One morning while getting dressed you pinch your stomach to check your weight.

28. While attempting to cook a new dish, you notice the grease in the frying pan.

29. Before going to the play, you put on your favorite dress.

30. While showering one morning, you notice the shape of your hips.

Appendix E

Ambiguous Sentences and Disambiguated Versions-Phase 2

Ambiguous Sentences and Disambiguated Sentences (Part 2)

Weight Related Sentences

After eating dinner at a buffet, you realize the quantity of food you have eaten.
- After eating dinner at a buffet, you realize that you feel very fat.
- After eating dinner at a buffet, you realize that you feel very satisfied.

One morning while trying on your favorite jeans, you realize that your jeans don't fit properly.
- One morning while trying on your favorite jeans, you realize that your jeans are too tight.
- One morning while trying on your favorite jeans, you realize that your jeans are too loose.

After the doctor weighs you, he looks at you very closely.
- After the doctor weighs you, he looks at you with disapproval.
- After the doctor weighs you, he looks at you with approval.

While looking at a picture of a model in a magazine, you think about how you would look in her outfit.
- While looking at a picture of a model in a magazine, you think about how fat you would look in her outfit.
- While looking at a picture of a model in a magazine, you think about how great you would look in her outfit.

As you sit on the couch, you notice your thighs.
- As you sit on the couch, you notice your thighs as they spread out on the couch.
- As you sit on the couch, you notice the firmness of your thighs.

While reading one afternoon, you think about your weight.
- While reading one afternoon, you couldn't stop thinking about the weight you had gained.
- While reading one afternoon, you thought about the weight you had lost.

While wearing a sleeveless shirt you notice your upper arms.
- While wearing a sleeveless shirt you notice how flabby your upper arms are.
- While wearing a sleeveless shirt you notice how good your upper arms look.

During a social function, you notice a group of people looking at you.
- During a social function, you notice a group of people staring at your fatness.
- During a social function, you notice a group of people looking at your shapely figure.

One morning while getting dressed you pinch your stomach to check your weight.
One morning while getting dressed you pinch your stomach to check your weight, and realize that you are getting heavier.
One morning while getting dressed you pinch your stomach to check your weight and realize that you haven't gained any weight.

While showering one morning, you notice the shape of your hips.
While showering one morning, you notice how large your hips are.
While showering one morning, you notice how slim your hips are.

Social Threat Sentences

As you approach the party you can hear music and noisy conversation, but as you walk through the door, everyone stops talking and stares.
As you approach the party you can hear music and noisy conversation, but as you walk through the door, everyone stops talking and stares at you.
As you approach the party you can hear music and noisy conversation, but as you walk through the door, everyone stops talking and stares because the music came to an end.

Out shopping one day, you see a friend across the road, but when you call to them they walk straight past.
Out shopping one day, you see a friend across the road, but when you call to them they don't notice you.
Out shopping one day, you see a friend across the road, but when you call to them they ignore you completely.

After applying for a job that you really want, you receive a letter from them which contains the answer you had expected.
After applying for a job that you really want, you receive a letter from them which contains the expected rejection.
After applying for a job that you really want, you receive a letter from them which contains the offer you had hoped for.

As you drive down the interstate, you notice the man in the car next to you.
As you drive down the interstate, you notice the man in the car next to you has a gun.
As you drive down the interstate, you notice the man in the car next to you is smiling at you.

Having arranged to meet a friend at a bar, you arrive to find that they are not there.
Having arranged to meet a friend at a bar, you arrive to find that they have stood you up.
Having arranged to meet a friend at a bar, you arrive to find that you have gotten there before them.

It is your birthday, but no cards have arrived when you leave for work.
It is your birthday, but no one has remembered to send you a card.
It is your birthday, but you leave for work before the mail arrives.

When you show people the thing that you have made, everyone comments on your handiwork.
When you show people the thing that you have made, everyone criticizes your handiwork.
When you show people the thing that you have made, everyone praises on your handiwork.

As you stop to buy a newspaper, you hear rapid footsteps behind you.
As you stop to buy a newspaper, you hear somebody running up to attack you.
As you stop to buy a newspaper, you hear somebody running past you.

As you open the parcel with a knife, you slip and cut deeply.
Your hand slips as you open the parcel, and you cut yourself deeply.
Your hand slips as you open the parcel, and you damage the contents.

While attempting to cook a new dish, you notice the grease in the frying pan.
While attempting to cook a new dish, the grease catches fire and burns you severely.
While attempting to cook a new dish, you notice that your meal is sizzling.

Appendix F

Memory Task-Phase 2

Part B2

Your job is to rate the similarity of each sentence to one of the scenes that you IMAGINED while listening to the tape. Some of these sentences will be very similar to what you imagined while listening to the tape, some will be different, and some you have not heard. Please use the following rating scale in making your judgments. Record your answers on the attached rating sheet.

1. Very Similar
2. Fairly Similar
3. Fairly Different
4. Very Different

Practice:

A. Although you would like to fly home for Christmas, you plan to drive because it is so much cheaper.

B. While washing the car, you were caught in a rainstorm.

C. You and your friends decide to go to a movie.

Rate the similarity of each of the following sentences to the situations that you imagined while listening to the tape.

1. After eating dinner at a buffet, you realize that you feel very fat.

2. While attempting to cook a new dish, you notice that your meal is sizzling.

3. While showering one morning, you notice how slim your hips are.

4. As you approach the party you can hear music and noisy conversation, but as you walk through the door, everyone stops talking and stares at you.

5. While reading one afternoon, you couldn't stop thinking about the weight you had gained.

6. After applying for a job that you really want, you receive a letter from them which contains the offer you had hoped for.

7. It is your birthday, but no one has remembered to send you a card.

8. While looking at a picture of a model in a magazine, you think about how great you would look in her outfit.

9. One morning while getting dressed you pinch your stomach to check your weight, and realize that you are getting heavier.

10. As you stop to buy a newspaper, you hear somebody running up to attack you.

11. During a social function, you notice a group of people looking at your shapely figure.

12. Out shopping one day, you see a friend across the road, but when you call to them they don't notice you.

13. As you sit on the couch, you notice the firmness of your thighs.

14. When you show people the thing that you have made, everyone praises on your handiwork.

15. While wearing a sleeveless shirt you notice how good your upper arms look.

16. After the doctor weighs you, he looks at you with disapproval.

17. As you drive down the interstate, you notice the man in the car next to you is staring angrily at you.

18. One morning while trying on your favorite jeans, you realize that your jeans are too loose.

19. Your hand slips as you open the parcel, and you cut yourself deeply.

20. Having arranged to meet a friend at a bar, you arrive to find that you have gotten there before them.

21. After eating dinner at a buffet, you realize that you feel very satisfied.

22. As you approach the party you can hear music and noisy conversation, but as you walk through the door, everyone stops talking and stares because the music came to an end.

23. While reading one afternoon, you thought about the weight you had lost.

24. After applying for a job that you really want, you receive a letter from them which contains the expected rejection.

25. It is your birthday, but you leave for work before the mail arrives.

26. While showering one morning, you notice how large your hips are.

27. While attempting to cook a new dish, the grease catches fire and burns you

severely.

28. While looking at a picture of a model in a magazine, you think about how fat you would look in her outfit.

29. As you stop to buy a newspaper, you hear a jogger that is about to run past you.

30. During a social function, you notice a group of people staring at your fatness.

31. Out shopping one day, you see a friend across the road, but when you call to them they ignore you completely.

32. One morning while getting dressed you pinch your stomach to check your weight and realize that you haven't gained any weight.

33. When you show people the thing that you have made, everyone criticizes your handiwork.

34. As you sit on the couch, you notice your thighs as they spread out on the couch.

35. As you drive down the interstate, you notice the man in the car next to you is smiling at you.

36. After the doctor weighs you, he looks at you with approval.

37. Having arranged to meet a friend at a bar, you arrive to find that they have stood you up.

38. While wearing a sleeveless shirt you notice how flabby your upper arms are.

39. Your hand slips as you open the parcel, and you damage the contents.

40. One morning while trying on your favorite jeans, you realize that your jeans are too tight.

Appendix G

Body Shape Questionnaire

We would like to know how you have been feeling about your appearance over the PAST FOUR WEEKS. Please read each question and circle the appropriate number to the right. Please answer all the questions.

OVER THE PAST FOUR WEEKS:	Never	Rarely	Some-times	Often	Very Often	Always
1. Has feeling bored made you brood about your shape?	1	2	3	4	5	6
2. Have you been so worried about your shape that you have been feeling that you ought to diet?	1	2	3	4	5	6
3. Have you thought that your thighs, hips, or bottom are too large for the rest of you?	1	2	3	4	5	6
4. Have you been afraid that you might become fat (or fatter)?	1	2	3	4	5	6
5. Have you worried about your flesh not being firm enough?	1	2	3	4	5	6
6. Has feeling full (e.g., after eating a large meal) made you feel fat?	1	2	3	4	5	6
7. Have you felt so bad about your shape that you have cried?	1	2	3	4	5	6
8. Have you avoided running because your flesh might wobble?	1	2	3	4	5	6
9. Has being with thin women made you feel self-conscious about your shape?	1	2	3	4	5	6
10. Have you worried about your thighs spreading out when sitting down?	1	2	3	4	5	6
11. Has eating even a small amount of food made you feel fat?	1	2	3	4	5	6
12. Have you noticed the shape of other women and felt that your own shape compared unfavorably?	1	2	3	4	5	6
13. Has thinking about your shape interfered with your ability to concentrate (e.g., while watching TV, reading, listening to conversations)?	1	2	3	4	5	6

	Never	Rarely	Some-times	Often	Very Often	Alway
14. Has being naked, such as when taking a bath, made you feel fat?	1	2	3	4	5	6
15. Have you avoided wearing clothes which make you particularly aware of the shape of your body?	1	2	3	4	5	6
16. Have you imagined cutting off fleshy areas of your body?	1	2	3	4	5	6
17. Has eating sweets, cakes, or other high calorie food made you feel fat?	1	2	3	4	5	6
18. Have you not gone out to social occasions (e.g., parties) because you have felt bad about your shape?	1	2	3	4	5	6
19. Have you felt excessively large and rounded?	1	2	3	4	5	6
20. Have you felt ashamed of your body?	1	2	3	4	5	6
21. Has worry about your shape made you diet?	1	2	3	4	5	6
22. Have you felt happiest about your shape when your stomach has been empty (e.g., in the morning)?	1	2	3	4	5	6
23. Have you thought that you are the shape you are because you lack self-control?	1	2	3	4	5	6
24. Have you worried about other people seeing rolls of flesh around your waist or stomach?	1	2	3	4	5	6
25. Have you felt that it is not fair that other women are thinner than you?	1	2	3	4	5	6
26. Have you vomited in order to feel thinner?	1	2	3	4	5	6

	Never	Rarely	Some-times	Often	Very Often	Always
27. When in company have you worried about taking up too much room (e.g., sitting on a sofa or bus seat)?	1	2	3	4	5	6
28. Have you worried about your flesh being dimply?	1	2	3	4	5	6
29. Has seeing your reflection (e.g., in a mirror or shop window) made you feel bad about your shape?	1	2	3	4	5	6
30. Have you pinched areas of your body to see how much fat is there?	1	2	3	4	5	6
31. Have you avoided situations where people could see your body (e.g., communal changing rooms or swimming pools)?	1	2	3	4	5	6
32. Have you taken laxatives in order to feel thinner?	1	2	3	4	5	6
33. Have you been particularly self-conscious about your shape when in the company of other people?	1	2	3	4	5	6
34. Has worry about your shape made you feel you ought to exercise?	1	2	3	4	5	6

Appendix H

Eating Attitudes Test

D.M. Garner and P.E. Garfinkel
"EAT"

Please circle the response which best applies to each of the numbered statements. Please answer each question carefully. Thank you.

Always	Very Often	Often	Sometimes	Rarely	Never		
0	1	2	3	4	5	1.	Like eating with other people.
0	1	2	3	4	5	2.	Prepare foods for others but do not eat what I cook.
0	1	2	3	4	5	3.	Become anxious prior to eating.
0	1	2	3	4	5	4.	Am terrified about being overweight.
0	1	2	3	4	5	5.	Avoid eating when I am hungry.
0	1	2	3	4	5	6.	Find myself preoccupied with food.
0	1	2	3	4	5	7.	Have gone on eating binges when I feel that I may not be able to stop.
0	1	2	3	4	5	8.	Cut my food into small pieces.
0	1	2	3	4	5	9.	Aware of the calorie content of foods that I eat.
0	1	2	3	4	5	10.	Particularly avoid foods with a high carbohydrate content (e.g. bread, potatoes, rice, etc.)
0	1	2	3	4	5	11.	Feel bloated after meals.
0	1	2	3	4	5	12.	Feel that others would prefer if I ate more.
0	1	2	3	4	5	13.	Vomit after I have eaten.
0	1	2	3	4	5	14.	Feel extremely guilty after eating.
0	1	2	3	4	5	15.	Am preoccupied with a desire to be thinner.
0	1	2	3	4	5	16.	Exercise strenuously to burn off calories.
0	1	2	3	4	5	17.	Weigh myself several time a day.
0	1	2	3	4	5	18.	Like my clothes to fit tightly.

Always	Very Often	Often	Sometimes	Rarely	Never		
0	1	2	3	4	5	19.	Enjoy eating meat.
0	1	2	3	4	5	20.	Wake up early in the morning.
0	1	2	3	4	5	21.	Eat the same foods day after day.
0	1	2	3	4	5	22.	Think about burning up calories when I exercise.
0	1	2	3	4	5	23.	Have regular menstrual periods.
0	1	2	3	4	5	24.	Other people think I am too thin.
0	1	2	3	4	5	25.	Am preoccupied by the thought of having fat on my body.
0	1	2	3	4	5	26.	Take longer than others to eat my meals.
0	1	2	3	4	5	27.	Enjoy eating at restaurants.
0	1	2	3	4	5	28.	Take laxatives.
0	1	2	3	4	5	29.	Avoid foods with sugar in them.
0	1	2	3	4	5	30.	Eat diet foods.
0	1	2	3	4	5	31.	Feel that food controls my life.
0	1	2	3	4	5	32.	Display self control around food.
0	1	2	3	4	5	33.	Feel that others pressure me to eat.
0	1	2	3	4	5	34.	Give too much time and thought to food.
0	1	2	3	4	5	35.	Suffer from constipation.
0	1	2	3	4	5	36.	Feel uncomfortable after eating sweets.
0	1	2	3	4	5	37.	Engage in dieting behavior.
0	1	2	3	4	5	38.	Like my stomach to be empty.
0	1	2	3	4	5	39.	Enjoy trying new rich foods.
0	1	2	3	4	5	40.	Have the impulse to vomit after meals.

Appendix I

Bulimia Test-Revised

The BULIT-R

Answer each question by filling in the appropriate circle on the computer answer sheet. Please respond to each item as honestly as possible; remember all of the information you provide will be kept strictly confidential.

1. I am satisfied with my eating patterns.

    1. agree
    2. neutral
    3. disagree a little
    4. disagree
    5. disagree strongly

2. Would you presently call yourself a binge eater"?

    1. yes, absolutely
    2. yes
    3. yes, probably
    4. yes, possible
    5. no, probably not

3. Do you feel you have control over the amount of food you consume?

    1. most or all of the time
    2. a lot of the time
    3. occasionally
    4. rarely
    5. never

4. I am satisfied with the shape and size of my body.

    1. frequently or always
    2. sometimes
    3. occasionally
    4. rarely
    5. seldom or never

5. When I feel that my eating behavior is out of control, I try to take rather extreme measures to get back on course (strict dieting, fasting, laxatives, diuretics, self-induced vomiting, or vigorous exercise).

    1. always
    2. almost always
    3. frequently
    4. sometimes
    5. never or my eating behavior is never out of control

6. I use laxatives or suppositories to help control my weight.

    1. once a day or more
    2. 3-6 times a week
    3. once or twice a week
    4. 2-3 times a month
    5. once a month or less (or never)

7. I am obsessed about the size and shape of my body.

    1. always
    2. almost always
    3. frequently
    4. sometimes
    5. seldom or never

8. There are times when I rapidly eat a very large amount of food.

    1. more than twice a week
    2. twice a week
    3. once a week
    4. 2-3 times a month
    5. once a month or less (or never)

9. How long have you been binge eating (eating uncontrollably to the point of stuffing yourself)?

    1. not applicable; I don't binge eat
    2. less than 3 months
    3. 3 months - 1 year
    4. 1 - 3 years
    5. 3 or more years

10. Most people I know would be amazed if they knew how much food I can consume at one sitting.

    1. without a doubt
    2. very probably
    3. probably
    4. possibly
    5. no

11. I exercise in order to burn calories.

    1. more than 2 hours per day
    2. about 2 hours per day
    3. more than 1 but less than 2 hours per day
    4. one hour or less per day
    5. I exercise but not to burn calories or I don't exercise

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12. Compared with women your age, how preoccupied are you about your weight and body shape?

    1. a great deal more than average
    2. much more than average
    3. more than average
    4. a little more than average
    5. average or less than average

13. I am afraid to eat anything for fear that I won't be able to stop.

    1. always
    2. almost always
    3. frequently
    4. sometimes
    5. seldom or never

14. I feel tormented by the idea that I am fat or might gain weight.

    1. always
    2. almost always
    3. frequently
    4. sometimes
    5. seldom or never

15. How often do you intentionally vomit after eating?

    1. 2 or more times a week
    2. once a week
    3. 2-3 times a month
    4. once a month
    5. less than once a month or never

16. I eat a lot of food when I'm not even hungry.

    1. very frequently
    2. frequently
    3. occasionally
    4. sometimes
    5. seldom or never

17. My eating patterns are different from the eating patterns of most people.

    1. always
    2. almost always
    3. frequently
    4. sometimes
    5. seldom or never

18. After I binge eat I turn to one of several strict methods to try to keep from gaining weight (vigorous exercise, strict dieting, fasting, self-induced vomiting, laxatives, or diuretics).

    1. never or I don't binge eat
    2. rarely
    3. occasionally
    4. a lot of the time
    5. most or all of the time

19. I have tried to lose weight by fasting *or* going on strict diets.

    1. not in the past year
    2. once in the past year
    3. 2-3 times in the past year
    4. 4-5 times in the past year
    5. more than 5 times in the past year

20. I exercise vigorously and for long periods of time in order to burn calories.

    1. average or less than average
    2. a little more than average
    3. more than average
    4. much more than average
    5. a great deal more than average

21. When engaged in an eating binge, I tend to eat foods that are high in carbohydrates (sweets and starches).

    1. always
    2. almost always
    3. frequently
    4. sometimes
    5. seldom, or I don't binge

22. Compared to most people, my ability to control my eating behavior seems to be:

    1. greater than others' ability
    2. about the same
    3. less
    4. much less
    5. I have absolutely no control

23. I would presently label myself a 'compulsive eater', (one who engages in episodes of uncontrolled eating).

    1. absolutely
    2. yes
    3. yes, probably
    4. yes, possibly.
    5. no, probably not

24. I hate the way my body looks after I eat too much.

    1. seldom or never
    2. sometimes
    3. frequently
    4. almost always
    5. always

25. When I am trying to keep from gaining weight, I feel that I have to resort to vigorous exercise, strict dieting, fasting, self-induced vomiting, laxatives, or diuretics.

    1. never
    2. rarely
    3. occasionally
    4. a lot of the time
    5. most or all of the time

26. Do you believe that it is easier for you to vomit than it is for most people?

    1. yes, it's no problem at all for me
    2. yes, it's easier
    3. yes, it's a little easier
    4. about the same
    5. no, it's less easy

27. I use diuretics (water pills) to help control my weight.

    1. never
    2. seldom
    3. sometimes
    4. frequently
    5. very frequently

28. I feel that food controls my life.

    1. always
    2. almost always
    3. frequently
    4. sometimes
    5. seldom or never

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29. I try to control my weight by eating little or no food for a day or longer.

    1. never
    2. seldom
    3. sometimes
    4. frequently
    5. very frequently

30. When consuming a large quantity of food, at what rate of speed do you usually eat?

    1. more rapidly than most people have ever eaten in their lives
    2. a lot more rapidly than most people
    3. a little more rapidly than most people
    4. about the same rate as *most* people
    5. more slowly than most *people*. (or not applicable)

31. I use laxatives or suppositories to help control my weight.

    1. never
    2. seldom
    3. sometimes
    4. frequently
    5. very frequently

32. Right after I binge eat I feel:

    1. so fat and bloated I can't stand it
    2. extremely fat
    3. fat
    4. a little fat
    5. OK about how my body looks or I never binge eat

33. Compared to other people of my sex, my ability to always feel in control of how much I eat is:

    1. about the same or greater
    2. a little less
    3. less
    4. much less
    5. a great deal less

34. In the last 3 months, on the average how often did you binge eat (eat uncontrollably to the point of stuffing yourself)?

    1. once a month or less (or never)
    2. 2-3 times a month
    3. once a week
    4. twice a week
    5. more than twice a week

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35. Most people I know would be surprised at how fat I look after I eat a lot of food.

    1. yes, definitely
    2. yes
    3. yes, probably
    4. yes, possibly
    5. no, probably not or I never eat a lot of food

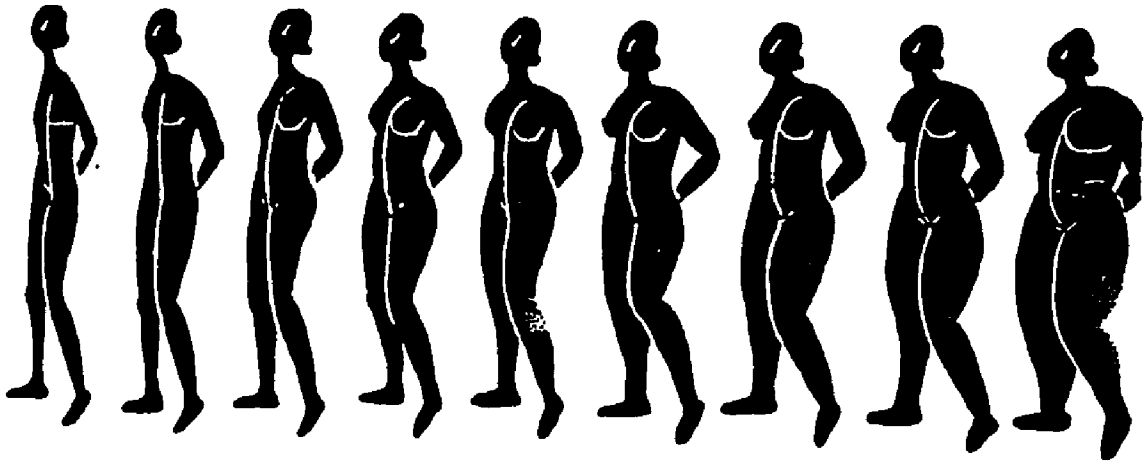
36. I use diuretics (water pills) to help control my weight.

    1. 3 times a week or more
    2. once or twice a week
    3. 2-3 times a month
    4. once a month
    5. never

Note. From "A revision of the bulimia test: The BULIT-R" by M. H. Thelen, J. Farmer, S. Wonderlich, & S. Smith, 1991, Psychological Assessment, 3, 119-124. Reprinted by permission.

Appendix J

Body Image Assessment



Appendix K

Consent Form

LOUISIANA STATE UNIVERSITY
AND AGRICULTURAL AND MECHANICAL COLLEGE
Psychological Services Center • Department of Psychology

Consent Form

This study is being conducted under the supervision of Donald A. Williamson, Ph.D., of the Psychology Department at Louisiana State University. The purpose of this study is to examine eating attitudes and behaviors among adolescent and adult individuals. All responses to the questionnaires will remain strictly confidential. You will be mailed a written summary describing the results of the evaluation. Only the researchers will have access to gathered information, and the questionnaires will be coded by your initials and a number code, not by your name. All results are based on group responses, not the responses of single individuals. This research may be used for published work.

You will be asked to complete an interview, several questionnaires, and a series of experimental tasks which will involve approximately four hours. If you have any questions, feel free to ask the researcher. Your participation is completely voluntary. If you decide to participate, please sign this form. You may withdraw from this study at any time.

Thank you for your participation.

_____ _____

Participant's Signature Date

_____ _____

Witness Date

Please send my written evaluation summary to the following address:

236 Audubon Hall • Baton Rouge • Louisiana • 70803-5501 • 504/388-1494 • FAX 504/388-4661

Vita

Lori Perrin was born in Omaha, Nebraska. She moved to upstate New York when she was 5, moved to Minnesota at 16, and North Dakota at 17. She majored in psychology while diving on the swim team at University of Idaho. She graduated with a B.A. in psychology in 1989. She earned a masters degree in psychology from Louisiana State University in 1993.

DOCTORAL EXAMINATION AND DISSERTATION REPORT

Candidate: Lori Perrin

Major Field: Psychology

Title of Dissertation: Interpretation of Ambiguous Body-Related Stimuli in the Eating Disorders

Approved:

Major Professor and Chairman

Dean of the Graduate School

EXAMINING COMMITTEE:

Date of Examination:

10/17/95